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# BANARAS HINDU UNIVERSITY JOURNAL

PART II 1958

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PART II

1958

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SCIENCE



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# ADVICE TO THE STUDENTS OF THE BANARAS HINDU UNIVERSITY

PANDIT M.M. MALAVIYA

[TWELFTH CONVOCATION ADDRESS]

I ask you young men and young women to remember the promises you have made to me and through me to your alma mater before you obtained your Dîplomas. Remember those promises. Remember also the advice which our esteemed Pro. Vice-Chancellor has given to you in the words of the revered Rishis of old. Speak the truth, live truth, think truth. Cotinue your studies throughout your life. Be just and fear none. Fear only to do that which is ill or ignoble. Stand up for right. Love to serve your fellow-men. Love the motherland. Promote Public weal. Do good wherever you get a chance for it. Love to give whatever you can spare.

Remember the great fundamental truth which you have repeatedly been taught in this University. Remember that the whole creation is one existence, regulated and upheld by one eternal, all-pervading intelligent power, or energy, one supreme life without which no life can exist. Remember that this universe is the manifestation of such a power, of the one without a second, as say the Upanishads, the creator and sustainer of all that is visible and of a vast deal which is invisible to the human eye. Remember that such a power-call him Brahma,—call him God, is both imminent and transcendant, and has exixted throughout all stages of evolution. He constitutes the life in all living creation. Should a doubt arise in your mind about the existence of this power, turn your gaze to the heavens, wonderfully lit with stars and planets, that have been moving for unimaginable ages in majestic order. Think of the light that travels with marvellous rapidity from the far distant Sun to foster and sustain life on earth. Turn your eyes and mind to the most excellent machine-your own body-which you have been blessed with, and ponder over its wonderful mechanism and vitality. Look around you and see the beautiful beasts and birds, the lovely trees, with their charming flowers and delicious fruits. Remember that One Supreme Life which we call Brahma or God dwells in all this living creation in the same way as it does in you and me. This is the essence of all religious instruction :

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'Ever to remember God, never forget Him.' All religious injunctions and prohibitions subserve these two alone. If you will remember that God exists and that He exists in all living creatures, if you will remember these two fundamental facts, you will ever be able to stand in correct ıelation with God and with all your fellow creatures. From the belief that God exists in all sentient beings has flowed the fundamental teaching which sums up the entire body of moral iujunctions of all religions, namely—

That is, one should not do unto others that which he would dislike if it were done to him. And
i.e., whatever one desires for himself, that he should desire for others also.

These two ancient injunctions lay down a complete code of conduct for all mankind.

If anybody should steal your watch or any other of your possessions you would be pained. Therefore cause not such pain to another by stealing his watch or any article. When you are ill or thirsty you desire that some one should give you medicine or relieve your thirst. Therefore if there be any sister or brother who stands in need of similar relief from you, consider it your duty to render it. Remember these two grand negative and positive injunctions; they embody the Golden Rule of conduct which has been applauded by all the religions of the world. It is the very soul of religion and ethics. Christianity claims it to be its own special contribution. But in reality it is a much older teaching and found a place of honour in the Mahabharat thousands of year before the advent of Christ. I say this not in any narrow spirit, but only to impress upon you that this ancient teaching has come down to us as a noble heritage, and that it is one of the most precious possessions not only of the Hindus but of the whole human race. Treasure it in your hearts, and I am sure your relations will be right and loveable both with God and man.

You must at the same time also remember that this is the country of your birth. It is a noble country. All things considered there is no country like it in the world. You should be grateful and proud that it pleased God to cast your lot here. You owe it a special duty. You have been born in this mother's lap. It has fed you, elothed you, brought you up. It is the source of all your comfort, happiness, gain and honour. It has been your play-ground, it will be the scene

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of all your activities in life, the centre of all your hopes and ambitions. It has been the scene of the activities of your forefathers, of the greatest and the humblest of your nation. It should be for you the dearest and the most revered place on the surface of the earth. You must therefore always be prepared to do the duty that your country may demand of you. Love your countrymen and promote unity among them. A large spirit of toleration and forbearance, and a larger spirit of loving service is demanded of you. We expect you to devote as much of your time and energy as you can spare to the uplift of your humble brethren. We expect you to work in their midst, to share their sorrows and their joys, to strive to make their lives happier in every way you can. And here I have a definite advice to offer you. We all deplore that there is immense ignorance in our country. We should not wait for its removal till we get Swaraj. I call upon every one of you, young men and young women, to take a vow that you will start a crusade against illiteracy, a campaign to spread knowledge and enlightenment among the teeming millions of India. Organise your strength. During the period of your leisure or vacation, make it a point to go to the villages and work among your countrymen. Be determined to dispel the darkness which envelopes our masses. Open schools. Instruct the masses in the three R's. i. e., reading, writing, and arthmetic. To which add one more, viz., 'religion, the religion of which I have spoken, the religion of love and service, of toleration and mutual regard. Teach these four R's to every boy and girl, every man and woman, old or young. Do not discard religion. Properly understood and taught, it will contribute in rich measure to promote harmony and happiness among all mankind. Promote education by the simplest means. Help our people by your instruction to advance sanitation, health and hygiene in their villages by their own co-operative organizations. I exhort you all, those who are going out of the University now and those who will still be here, to form a People's Education League, and start betimes the campaign against illiteracy and ignorance, which to our shame has too long been delayed. Invite all the educated youth of our country to join in undertaking this grand endeavour. We have only to combine and work. Success is certain to crown our efforts.

Throughout the period of your work, take care to keep alive the sense of your duty towards God and towards your country. It will sustain you in the most difficult situations and help you to avoid the many

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obstacles which beset your path. A remembrance of what you owe to God will help you to cherish feelings of brotherliness, of kindness and compassion, not only towards men but towards all innocent creatures of God. It will save you from causing hurt to any one except in the right of private self-defence or the defence of your country. A remembrance of your duty to your country, will help you always to be prepared to offer any sacrifice which may be demanded of you for the protection of its interests of honour. You want freedom, you want self-government in your country. You must be prepared to make every sacrifice which may be needed for it. You have in the course of your education studied the inspiring history past and present of the struggles to establish or maintain freedom, which have taken place in our own country and in other lands. You have read of the spirit of valour and self-sacrifice which breathes through the best part of Samskrit literature and of modern Indian literatures. You have read and re-read and admired many growing passages in the glorious literature of England which sing in high strain of liberty and of daring and self-sacrifice in its cause. You have learnt how in the recent Great War, the youths of England and France voluntarily exposed themselves to death in the defence of their own freedom or the freedom of other countries; with what valour and courage and tenacity French and English lads continued to fight until victory crowned their efforts, and thus own imperishable glory for their motherland. I exhort you to cultivate the same love of freedom and the same spirit of self-sacrifice for the glory of your motherland. Thus only shall we again become a great nation.

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# रवीन्द्रनाथ

## हजारी प्रसाद द्विवेदी

गत ७ अगस्त को कविवर रवीन्द्रनाथ का तिरोधान-दिवस सारे देश में मनाया गया है। भारतीय तिथियों के अनुसार यह श्राद्ध दिवस श्रावणी पूर्णिमा को पड़ना चाहिए। मुझे लगभग बारह वर्ष तक उनका स्नेह प्राप्त करने का अवसर मिला था। इस बीच उनके अनेक उपदेश सुनने को मिले हैं, अनेक आदेश पालन करने पड़े हैं, अनेक सरस विनोदों और झिड़कियों को भी सुनने का अवसर प्राप्त हुआ है—इन बातों की स्मृति आज अन्तस्तल में चुभती रहती है। इतना बड़ा प्रेमी, इतना बड़ा सदाशय, ऐसा महान् मानव-विश्वासी मनुष्य मैंने नहीं देखा। उनके पास दस मिनट बैठने के बाद चित्त में अपूर्व आत्मबल का संचार होता था। ऐसे लोग तो संसार में बहुत मिलेंगे जिनके पास जाने से मनुष्य अपने भीतर के दोषों को देखता है, अपने अन्तस्तल के असुर को प्रत्यक्ष देख कर निराश हो जाता है पर ऐसे लोग बहुत कम मिलेंगे जो उसके भीतर के देवता को प्रत्यक्ष करा दें। रवीन्द्रनाथ ऐसे ही महापुरुष थे। वे मनुष्य के अन्तस्तल में निस्तब्ध देवता को प्रत्यक्ष करा देते थे। उनका संपूर्ण व्यक्तित्व उनके काव्यों की भांति ही मनोहर उद्बोधक और प्रेरणादायक तत्वों से संघटित था। मैंने उन्हें अनेक विचित्र और जटिल समस्याओं के भीतर निवात-निष्कंप दीपशिखा की भांति प्रशान्त तेज से जलते देखा है, एक बार भी उन्हें ऊँचे आसन से नीचे उतरते नहीं देखा, एक बार भी उन्हें अभिभूत होते नहीं देखा। उनकी बड़ी बड़ी आंखों से स्निग्ध प्रीतिधारा झरती-सी रहती थी। मैंने उन्हें वृद्धावस्था में देखा था। फिर भी कैसी अपूर्व शोभा उनके इस वृद्ध शरीर में थी। जिस ओर से भी देखिए विधाता ने उन्हें अपूर्व चारुता-सम्पत्ति दे रखी थी। मुखमण्डल से कान्ति की धारा झरती रहती थी, बड़ी बड़ी आंखों से स्नेह की पावन धार बरसती रहती थी और श्वेत श्मश्रु से आच्छादित अधरोष्ठों के मन्दस्मित से तो अपूर्वशान्ति की स्रोतस्विनी ही बह जाया करती थी। उनके विराट् मानस में औदार्य तेज और प्रेम की त्रिवेणी लहराया करती थी और कुशाग्र बुद्धि जगत् की गूढ़तम समस्याओं को अनायास भेद जाया करती थी। जितना ही सोचता हूँ उतना ही लगता है, रवीन्द्रनाथ का व्यक्तित्व अपूर्व था, अद्‌भुत था। ऐसे महापुरुष के सान्निध्य को विधाता के वरदान के सिवा और क्या कहा जा सकता है और स्नेहाधार से विमुक्त होने को दुर्दैव के भयंकर अभिशाप के सिवा और क्या कहा जाय। उनके ही विषय में आज कहना है—आँखिन में जो सदा रहते तिनकी यह कान कहानी सुन्यो करें।"

जिस दृष्टि की प्रेमाप्लुत मोहिनी शक्ति की मैंने ऊपर चर्चा की है वह दृष्टि बड़ी भेदक थी। उसने इस युग के संपूर्ण रहस्य को इस सहज भाव से देखा था कि आश्चर्य होता है। उसमें सौन्दर्य और सत्य तक पहुँचने की अपूर्व शक्ति थी। यूरोप की सभ्यता ने हमारे



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देश के पिछले इतिहास को अभिभूत कर रखा था। कुछ लोग उसके प्रभाव में एकदम बह गए थे, कुछ दूसरे लोग ठीक बह तो नहीं गए थे पर उसकी ओर से धक्का खा कर अपने प्राचीन आचारों से चिपट गए थे। ये लोग पद-पद पर 'हमारे यहाँ' का ब्रह्मास्त्र चलाया करते थे। रवीन्द्रनाथ ने इस सभ्यता के दोष और गुण दोनों को विवेक के साथ परखा था। इस युग में यूरोप ने निश्चय ही किसी बड़े सत्य को पाया है; न पाया होता तो इतनी उन्नति उसकी न होती। रवीन्द्रनाथ ने इस सत्य से अस्वीकार नहीं किया। उन्होंने कहा था कि "भौतिक जगत् के प्रति व्यवहार सच्चा होना चाहिए, यह आधुनिक वैज्ञानिक युग का अनुशासन है। इसे नहीं मानने से हम धोखा खाएंगे। इस सत्य को व्यवहार करने की सीढ़ी है मन को संस्कार मुक्त करके विशुद्ध प्रणाली से विश्व के अन्तर्निहित भौतिक तत्वों का उद्धार करना।" आगे चल कर वे इस पर टिप्पणी करते हुए कहते हैं। यह बात सही है। "किन्तु और भी सोचने की बात रह जाती है। यूरोप ने जिस बात में सिद्धि प्राप्त की है उस पर हमारे देशवासियों की दृष्टि बहुत दिनों से पड़ी है, वहां पर उसका जो ऐश्वर्य है वह विश्व के सामने प्रत्यक्ष है। किन्तु जिस बात में उसे सिद्धि प्राप्त नहीं हुई है वह गहराई में है इसीलिये वह बहुत दिनों तक दुनियाँ की आँखों के ओझल रही है। यहीं उसने विश्व की भयंकर क्षति की है और यह क्षति अब धीरे धीरे उसी की ओर लौट रही है। यूरोप के जिस लोभ ने चीन को अफीम खिलाई है वह लोभ तो चीन की मृत्यु से ही मर नहीं जाता। हम बाहर से देख सकें या नहीं, यह लोभ यूरोप को प्रति दिन बेरहमी के साथ मोहान्ध बनाता जा रहा है केवल भौतिक जगत् में ही नहीं मनुष्य की दुनियाँ में भी निष्काम चित्त से सत्य का व्यवहार करना आत्म रक्षा का आखिरी और उत्तम उपाय है। उस सत्य व्यवहार पर से पश्चिमी जातियों की श्रद्धा प्रतिदिन कम होती जा रही है। इसी कारण उनकी लज्जा भी दूर होती जा रही है और इसीलिये उनकी समस्या भी जटिल होती जा रही है। विनाश नजदीक आता जा रहा है।"

क्या मानव जगत् और क्या भौतिक जगत् क्या स्वदेश और क्या विदेश, सर्वत्र सत्याचरण को ही उन्नति और अभ्युदय का मूल मंत्र मानना चाहिए। कवि ने अपने जीवन में भी और अपने ग्रन्थों में भी सर्वत्र इस सत्य का जयगान किया है। इस सत्य पर दृष्टि निबद्ध रहने के कारण ही आज से बीसियों वर्ष पहले वे ऐसी बात लिख गए हैं जो आज आश्चर्यजनक भविष्यवाणी जैसी लगती हैं। सन् १९१६ में चीन समुद्र से उन्होंने अपने एक प्रियजन को पत्र लिखा था। उसमें उन्होंने चीनी मजदूरों की अपूर्व कर्म तत्परता को देखकर लिखा था—"कर्म की यही मूर्ति है। एक दिन इसकी जीत होगी। यदि न हो, यदि वाणिज्य-दानव ही मनुष्य की घर गिरस्ती आनंद आजादी आदि को लीलता चला जाए और एक वृहद् गुलाम-संप्रदाय की सृष्टि कर डाले तथा उसी की मदद से कुछ थोड़े-से लोगों का आराम और स्वार्थ-साधन करता रहे तब यह पृथ्वी रसातल को चली जायगी। चीन को यह इतनी बड़ी शक्ति (कर्म करने की शक्ति) जिस दिन हमारे इस युग के सर्वश्रेष्ठ बाहन को पा सकेगी अर्थात् जिस दिन विज्ञान को हाथ कर लेगी उस दिन संसार की कौन-सी शक्ति है जो उसे बाधा दे सके?" रवीन्द्रनाथ की यह भविष्यवाणी सत्य सिद्ध हुई है। चीन को

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बाधा देने की समस्त चेष्टाएँ व्यर्थ हुई हैं। चीन की इस कर्म तत्परता को देख कर उन्हें अपना देश याद आ गया था। उन्होंने दीर्घ निश्वास त्याग करते हुए लिखा था—"कब मिलेगी यह तस्वीर भारतवर्ष में देखने को। यहां तो मनुष्य अपना बारह आना अंश अपने आपको ही धोखा देकर काट रहा है। नियमों का ऐसा जाल फैला है जिससे केवल बाधा ही बाधा पाकर, केवल उलझ उलझ कर ही, अपनी शक्ति का अधिकांश फिजूल खर्च कर देता है, बाकी अंश को काम काज में जुटा ही नहीं पाता। विपुल जटिलता और जड़ता का ऐसा समावेश पृथिवी में और कहीं नहीं मिल सकता। चारों ओर केवल जाति के साथ जाति का विच्छेद, नियम के साथ काम का विरोध, और आचार धर्म के साथ काल धर्म का द्वन्द्व फैला हुआ है। इस प्रकार उन्होंने भारतीय धर्म की जड़ विधियों का तिरस्कार किया था परन्तु सत्यों का सत्य यह है कि उपनिषदों के अपूर्व रस का मंथन करने के बाद ही उन्होंने सिद्धांत सिद्ध किया था। रवीन्द्रनाथ मनुष्य की जीवन धारा में पूर्ण आस्था रखते थे। वे जानते थे कि ऊपर का हो हल्ला क्षणिक है। समस्त अशान्ति और आलोड़न के नीचे मनुष्य जाति की वह सहज कर्मशील धारा ही एकमात्र जीवित रहती है जो मैदानों में परिश्रम करती है जो जड़ संचय के बल पर नहीं बल्कि जीवन्त प्राणमय कर्म शक्ति पर भरोसा रखती है। इसीलिये वे प्रबल उत्तेजना के समय भी शान्त निस्तब्ध रह सके थे। उनका उस परमात्मा में विश्वास था जो विलास और शक्तिमद में नहीं रहता बल्कि कर्ममय मानव जीवन के साथ नित्य चला करता है। एक कविता में उन्होंने इस भाव को बड़े सुन्दर ढंग से व्यक्त किया है।

वे चिरकाल रस्सी खींचते हैं, पतवार थामे रहते हैं।

वे मैदानों में बीज बोते हैं, पका धान काटते हैं—वे काम करते हैं नगर और प्रान्तर में।

राज छत्र टूट जाता है रणडंका बंद हो जाती है।

विजयस्तंभ मूढ़ की भांति अपना अर्थ भूल जाता है,

लहू लुहान हथियार धरे हथियारों के साथ सभी लहूलुहान आखें शिशुपाठ्य कहानियों में मुँह ढांपे पड़ी रहती हैं।

वे काम करते हैं—देशदेशान्तर में।
अंग वंग कलिंग में
समुद्र और नदियों के घाट घाट में
पंजाब में बंबई में गुजरात में।
उनके गुरु गर्जन और गुन गुन स्वर
दिन रात में गुंथे रह कर दिन यात्रा को मुखरित किए रहते हैं।
मंद्रित कर डालते हैं जीवन के महायंत्र की ध्वनि को
सौ-सौ साम्राज्यों के भग्नावशेष पर
वे काम किए जा रहे हैं !

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रवीन्द्रनाथ ने कई सौ ग्रन्थ लिखे हैं, इनमें कविता हैं, उपन्यास हैं, कहानियां हैं, नाटक हैं निबंध हैं आलोचना हैं—साहित्य अपने व्यापक अर्थ में जो कुछ भी सूचित करता है उन सब पर उनका अवाध अधिकार था। देश और दुनिया की सभी समस्याओं पर उन्होंने विचार किया है। सर्वत्र उन्होंने सत्य का पक्ष लिया है। सम्राटों की विकट भृकुटियों की उन्होंने परवा नहीं की, धनकुवेरों की भरी थैलियों की ओर उन्होंने आंख उठाकर नहीं ताका। वे विशुद्ध मनुष्यता के गीत गाते रहे। उन्होंने सयय रहते ही संसार को विनाश की आंधी से बचने की सतर्क वाणी उच्चारित की थी पर ऊंचे सिंहासनों तक वह वाणी पहुंच नहीं सकी। मृत्यु के कुछ दिन पूर्व उनके चित्त में यह आशंका प्रबल रूप धारण करती जा रही थी कि संसार फिर एक बार शिशुघाती प्रबल वीभत्सता का शिकार होने जा रहा है। उन्होंने व्याकुल भाव से अपने इतिहास विधाता से इसका प्रतिरोध करने लायक शक्ति मांगी थी—

इधर दानव पक्षियों के झुंड उड़ते आ रहे हैं क्षुब्ध अंबर में
विकट वैतरणिका के अपर तट से यंत्रपक्षों के विकट हुंकार से करते अपावन
गगनतल को, मनुज शोणित मांस के ये क्षुधित दुर्दम गिद्ध !
—कि महाकाल के सिंहासनस्थित हे विचारक शक्ति दो मुझको—
निरन्तर शक्ति दो, दो कंठ में मेरे विकट वह वज्रवाणी, करूं कठिन प्रहार
इस वीभत्सता पर, बालघाती नारिघाती इस परम कुत्सित अनय को
कर सकूं धिक्कार-जर्जर ! शक्ति दो ऐसी कि यह वाणी सदा स्पंदित
रहे लज्जातुरित इतिहास के हृद्देश में उस समय भी जव रुद्धकंठ
भयार्त्त यह शृंखलित युग चुपचाप हो प्रच्छन्न अपने चिता-भस्मस्तूप में।

निस्सन्देह रवीन्द्रनाथ की यह वज्रवाणी इतिहास के लज्जातुर स्पंदन में सदा अंकित रहेगी और जव यह शृंखलित युग चुपचाप चिता भस्म के नीचे दब जायगा तो वह विशुद्ध मानवता अंकुरित होगी जिसके लिये वे इतना कुछ कर गए हैं। तथास्तु।

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# HYMNS OF RESTORATION IN THE ATHARVAVEDA : THEIR HISTORICAL SIGNIFICANCE

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## 1. *Nature of the Hymns :*

The Atharvavedic hymns III.3 and III.8 are classified by Kauśika[1] under the ceremonies known as *rājakarmāṇi* (rituals meant for kings). It is not easy to say that these hymns were originally composed for this very purpose, but it is true that during the period of their *vinivoga* (application) they were used for ritualistic purposes. The hymns in question, according to Sāyaṇāchārya, were uttered in a ceremony for the restoration of a king (uprooted by his enemies) to his state :

"अचिक्रदत्" इति सूक्तेन शत्रूत्सादितस्य राज्ञः पुनः स्वराष्ट्रप्रवेशार्थं शत्रुसेनाकारं पुरोडाशं उदकेषु दर्भान् संस्तीर्य तत्र निनयेत् ।

ततो निमज्जनार्थं तं पुरोडाशं लोष्ठेन पूरयेत् ।

तथा अनेन सूक्तेन स्वराष्ट्र प्रवेशार्थं क्षीरौदनं संपात्य अभिमन्त्र्य राजानम् आशयेत् ।

## 2. *The Mode of Accession in the Vedic period :*

As evident from many hymns in the Ṛgveda[2] and, the Atharvaveda[3] a king was either elected or selected by the people of a clan or he succeeded his father under hereditary right to the state. The mode of accession varied with the type of the state. If the state was tribal or in the transition from primitive republicanism to monarchism its king was either elected or selected. In case it was a territorial big state and kingship had, in course

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[1] अत्र सूत्रम् । "अचिक्रदर" [३. ३.] आत्वागन् [३. ४.] इति 'यस्माद् राष्ट्राद् आवरुद्धंस्तस्याशायां सेनाविधं पुरोडाशं दर्भेषूदके निनयति' इत्यादि कौ. सू. II. 7

According to the Vaitāna-sūtra, however, hymn III. 3 was used in the Sākamedha ritual : 'कार्तिधक्यां साकमेधाः । पूर्वेद्युरिष्टयाम् अग्नेरनीकवतोऽचिक्रद् इति [२. ५]

This application, however, has nothing to do with the original purose of the hymn.

[2] विशस्त्वा सर्वा वाञ्छन्तु............ । X. 173

[3] त्वां विशो वृणुतां राज्याय.......... । III. 4. 2

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of time, accumulated political and military powers under its ambit, the king followed his father on the throne as a matter of course, though the people still exercised great influence over the state.

*3. Deposition due to Various Factors :*

Various factors were responsible for the deposition of a king. In a tribal or primitive republican state there was always a keen competition for kingship (leadership) and there was a large number of rivals, born in the same community or clan, who were called *sajātāḥ, sapatnaḥ, rājānaḥ*, etc. in the Vedic texts. Sāyaṇa[1] explains the term 'sajātaḥ' as 'those of equal birth or kinsmen.' The persons of equal births were, no doubt, natural assests but they also constituted occasional dangers due to individual ambition and mutual rivalry. In the Vājasaneyi Saṁhitā of the Śukla-Yajurveda (IX. 40) there is a prayer for making a king '*a-sapatna*' (without a rival) : "Make him, O gods, to be unrivalled for great rulership, for great superiority, for great national rule etc.[2] '*Saptna*' obviously was a rival belonging, most probably, to the same clan. In a tribal or primitive republican state all able-bodied persons of equal or good births were called '*rājānaḥ*' or 'kings.' They used to be present at the time of election, selection or succession of a king to the throne and they were supposed to have transferred their political power to the king elect.[3] Besides these, there are references to '*pratijanāḥ*,' '*Pratimitrāḥ*' and '*niṣṭyaḥ*'[4] who were enemies of the king either belonging to the same state or belonging to a foreign state. Sāyaṇa does not comment on the term '*pratijanāḥ*' but adds, 'may they serve you constantly',[5] which suggests that they were internal enemies, who became subservient after the restoration of the king. In the case of a big state, however, they might be foreign enemies, who joined an incursion against an exiled king but after his restoration became friendly and helpful. The next term '*pratimitrāḥ*' is capable of the same interpretation. Sāyaṇa[6] comments on this word as 'friends turned adverse.' The word 'niṣṭyaḥ'

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[1] सजाता: समानजन्मानो बन्धव: । comment. on the Atharvaveda,III. 3. 4.

[2] इमं देवा असपत्नꣳसुवद्धं महते क्षत्राय महते ज्यैष्ठाय महते जानराज्याय etc.

[3] ये राजानो राजकृत: सूता ग्रामण्यश्च ये । Atharvaveda, III 5. 7.

[4] Atharvaveda, III. 3. 5. 6.

[5] प्रतिजना: हे राजन् त्वा त्वां वयन्तु सातत्येन सेवन्ताम् । ibid, III. 3. 5.

[6] प्रतिमित्रा: प्रतिकूलानि मित्राणि अवृषत विरोधं परित्यज्य संमजन्ताम् । Atharva. III. 3. 5.

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is of a doubtful meaning. Sāyaṇa[1] interprets it as "low or of inferior power'. But why, then, this anxiety of 'getting him away'[2] ? Whitney[3] rightly translates it as 'whatever outsider.' There was every likelihood of a King being deposed by a foreign enemy. Thus the deposition of a king does not only imply that it was by people of the same state, it might as well have been by a foreign power. In both the cases restoration was desired for and rituals performed seeking divine help for the reconciliation or removal of the opponents and enemies.

### 4. *Places of Refuge or Exile :*

The deposed King sought shelter in various places. They also find mention in the hymn under consideration : "From the waters let the King Varuna call thee ; let Soma call thee from the mountains ; let Indra call thee from your own people ; becoming a falcon, fly unto these subjects (of your lost kingdom)."[4] Here the places mentioned are 'waters,' and 'mountains' and some protection was afforded by the friends and relations who accompanied the exiled king. Another place of shelter, which was actually a place of comfinement, was a foreign country[5] where the deposed king was detained as a captive : "Let the falcom lead higher from far (*para*) the one to be called, living exiled in others' territory (*anyakṣetre*) ; let the two Aśvins make the road for thee easy ;.........".[6] What do the words

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1 यश्च निष्टय: नीचे: । निकृष्टबल इति । ibid III. 3. 6.

2 अपाञ्चमिद्र तं कृत्वा.........। ibid

3 Atharvaveda Saṁhitā. Eng. Trans. H. O. S. Vol. 7.

4 अद्भ्यस्त्वाराजा वरुणो ह्वयतु सोमस्त्वा ह्वयतु पर्वतेभ्य: ।
इन्द्रस्त्वा ह्वयतु विड्भ्य आभ्य: श्येनो भूत्वा विश आ पतेमा: ।।
Atharva, III. 3. 3. Whitney translates 'adbhyaḥ' as for waters' insted of 'from waters' which does not give any sense and goes against the commentary of Sāyaṇa.

5 राज्यभ्रष्टस्य राज्ञ: त्रीणि निवासस्थानानि संभावितानि । समुद्रमध्यम् पर्वता: देशान्तरं वा Sāyaṇa, ibid.

6 श्येनो ह्वव्यं नयत्वा परस्मादन्यक्षेत्रे अपरूद्धं चरन्तम् ।
अश्विना पन्थां वृणुतां सुगं त इमं सजाता अभिसंविश्ध्वम् ।। Atharva III. 3. 4.
Atharva., III. 3. 4. Sayand comments on this mantras as follows : "श्येन: शंसनीयंगति: द्युस्थानो देव: अन्यक्षेत्रे पर राष्ट्रे अवरुद्धं शत्रुभिर्निरुद्धं चरन्तम् वर्तमानम् अतएव हव्यं ह्वातव्यम् ।............इदृशं तं राजानं परस्मात् परराष्ट्राद् आ नयतु स्वदेशं प्रति प्रापयतु ।।"

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'waters' and 'mountains' exactly mean? Do they simply mean the watery and mountainous retreats where the deposed king wandered for his safety or something else. If they meant the former, a forest would have been a better hiding shelter. The deposition of a king does not mean that he was driven out of the country invariably. Very often he must have resisted, fought and taken defensive positions in some of the places built for the same. From the Atharvaveda to the Arthaśāstra is a long jump, but one is tempted to suggest that 'waters' and 'mountains' imply here watery and mountainous forts specially meant for defensive purposes according to Kautilya,[1] the author of the Arthaśāstra. One is encouraged to make this suggestion, because as early as the time of the Ṛgveda '*āyasī*'[2] (iron) and *aśmamayī* (stone) forts[3] are mentioned. An exile or detention in a foreign country does not require any explanation.

*5. Attempts at Restoration:*

Deposition was a political coup effected by the rivals, opponents or enemies of a king. But it was not taken lying down. The deposed king himself was smarting and only too anxious to recapture his power. Very often he was hiding. But even though he was detained as a captive in a foreign land he was contriving to get out of the place of his confinement. These attempts at restoration are clearly evident from the Hymns of Restoration under consideration. Restorative rituals were dramatic and superhuman appeals focussing attention on things human and mundane./

*6. Agencies of Restoration:*

Though in these hymns gods, superhuman powers, are invoked to restore the deposed king to his former kingdom, the human agenies are also visible behind the ritualistic performances. The king himself must have taken initiative. But he was inspired and throughout helped by his most intimate and influential functionary of the state, the *Purohita*, the Royal Priest-cum-Adviser, who combined both the political and religious powers and was well-versed in state-craft and Atharvan rites for the invocation of invisible powers. The presiding priest starts his prayer with a reference to the strong and loud appeal of the king and his own request to gods in the following words:

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[1] अन्तर्द्वीपं स्थलं वा निम्नावरुद्धमौदकं प्रस्तरं गुहां वा पार्वतं···III. 21. 2.

[2] II. 58. 8.

[3] IV. 30. 20.

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'He (the deposed king) hath shouted (*acikradat*) ; may he be protector of his own (people) here ; O Agni (Fire or Leader) pervade the wide earth and the sky ; let the all-knowing Maruts (Winds or powerful soldiers) harness thee ; lead those hither this (deposed king) who has offered oblations with solutation."[1]

Here the selection of gods is not without significance—Agni or Fire had always been the symbol of the political and cultural expansion of the Aryans. Fire as a symbol was carried onward by a leader obviously a human person. The movement for restoration was led by a human leader, most probably the *Purohita.* In this work the *Purohita* was helped by his numerous colleagues :

> "Let the ruddy ones (officiating priests) set in motion hither Indra, the inspired one, however far away, for the friendship of (the deposed king), when the gods venture for him a *gāyatrī*, a *bṛhatī*, a song, with the *sautrāmaṇi* ceremony."[2]

In the Vedic mythology the Maruts are the tumultuous soldiers of India. Indra is a replica of the earthly king and the-Maruts those of earthly soldiers. While the rituals for restoration were going on, it was thought necessary that the movement for restoration should be backed by military preparation.

### 7. *Methods of Restoration :*

The first factor to be dealt with by the exiled king was the people whom he was anxious to serve and with whom he wanted to be reunited. They must be willing to receive back the deposed king. Other factors to be reckon with were the *sajātāḥ* (of equal birth), *Pratijanāḥ* (rivals) *pratimitrāḥ* (opponents) and *niṣṭyaḥ* (mean enemies). first of all reconcilation was attempted and they were persuaded to call the exiled king back.[3] But

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[1] अचिक्रदत् स्वपा इह भुवदग्ने व्यचस्व रोदसी उरूची ।
युञ्जन्तु त्वा मारुतो विश्ववेदस आमुं नय नमसा रातहव्यम् ।। Atharva III. 3. 1.

[2] दूरे चित् सन्तमरूषास इन्द्र मा च्यावयन्तु सख्याय विप्रम् ।
यद् गायत्रीं वृहतीमर्कमस्मै सोत्रामव्या दधृषन्त देवाः ।। ibid, III. 3. 2.
Sāyaṇa, commenting up on the word अरूषास, writes" अरूषासः आरोचमानाः दीप्यमाना । ······ऋत्विजः····· ।

[3] इमं सजाता अभिसंविशध्वम् । Atharva III. 3. 4.
ह्वयन्तु त्वा प्रतिजनाः प्रतिमित्राः अवृषत् । ibid III. 3. 5.



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in case they opposed restoration, they were removed out of the way under force for which military preparation had already been made :

> "Whosoever of equal birth or enemies of mean disposition opposes invitation (or call back) to you may Indra get him away and bring you back to this (kingdom)[1].

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[1] यस्ते हवं विवदत् सजातो यश्च निष्टयः ।
अपाञ्चमिद्र तं कृत्वाथेममिहाव गमय ।। ibid. III 3. 6.

Sāyaṇa eomments upon this mantra as follows :

"हे राजन् ते तव हवम् स्वराष्ट्रप्रवेशविषयं पुनराह्वानं यः सजातः समानजन्मा । समबल इत्यर्थः । यश्च निष्टयः नीचः । निकृष्ठबल इत्यर्थः ।··हे इन्द्र तं उभयविधं शत्रुम अपाञ्चम् अपगतं बहिष्कृत्वा अथ अनन्तरम् इदं प्रकृतं राजानम् इह अस्मिन राष्ट्रे अवबोधय । अस्य राष्ट्रस्य अयमेव राजेति प्रख्यापयेत्यर्थः ।।

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# ŚARABHA-MŪRTI

V. S. AGRAWALA,

B. H. U.

Śarabha is believed to be a fabulous animal with eight legs. Kalidāsa refers to Śarabha in the Himalayas:

ये संरम्भोत्पतनरभसाः स्वांगभंगाय तस्मिन्
मुक्त्वाध्वानं सपदि शरभा लंघयेयुर्भवन्तम् ।
तान्कुर्वीथास्तुमुलकरकावृष्टिपातावकीर्णान्
के वा नस्युः परिभवपदं निष्फलारंभयत्नाः ।। (Meghadūta, 1-54)

Mallinātha's comment is helpful:

ये शरभा अष्टापद मृगविशेषाः । 'शरभः शलभेचाष्टपदे प्रोक्तो मृगान्तरे' इति विश्वः ।

Śarabha as a deer with eight feet was known to the epics:

तथाष्टपदः शरभः सिंहघाती । (Āraṇyankaparva, 134.14) Poona edition.

Here Śarabha is not an animal of the deer family, but a wild animal more powerful than the lion. This feature is brought out more clearly in another context:

श्वा त्वं द्वीपित्वमापन्नो द्वीपी व्याघ्रत्वमागतः ।
व्याघ्रो नागो मदपटुर्नागः सिंहत्वमाप्तवान् ।।
सिंहोऽतिबलसंयुक्तो भूयः शरभतांगतः । (Śāntiparva, 117, 41, 42)

Here the ascending series consists of a dog, a leopard, a tiger, an elephant, a lion and a Śarabha. In the context of the same story we find mention of the physical features of a Śarabha as follows:

कदाचित् कालयोगेन सर्वप्राणिविहिंसकः ।
बलवान् क्षतजाहारो नानासत्त्वभयंकरः ।।
अष्टपादूर्ध्वचरणः शरभो वनगोचरः । (Sāntiparva, 117, 33-34)

The last line of the above citation is read in the Śabdakalpadruma as:

अष्टपादूर्ध्वनयन ऊर्ध्वपादचतुष्टयः ।

*Mahāmṛiga*, and *Mahāsiṃha*, are recorded as synonyms of Śarabha as *utpādaka*, an animal with upper feet on the back. Of the eight feet attributed to Śarabha four were normal, and the other four projected upwards.

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Such an animal is not known in nature. Śarabha was then a symbolical conception.

Gopinath Rao records Śarabha as a form of Śiva, with two heads, two wings, eight legs of the lion with sharp claws, and a long tail (Hindu Iconography, Vol. II, p. 172). Citing further the Kāmikāgama, he mentions Śarabha as having four legs resting upon the grounds and four other lifted upwards.

Śiva is celebrated as Aṣṭa-mūrti. Under this entry, the 'Śabda-kalpadruma makes a significant statement on the authority of the Kālikā Purāṇa implying that *Aṣṭamūrti Śiva and Aṣṭapada* Śarabha are identical conceptions. (एताः शरभरूपि शिवस्याष्टपादाः इति कालिकापुराणम्) ।।

The eight forms of Śiva are well known. A typical list is given by Kalidasa in the first verse of the Abhijñāna-Śakuntala

या सृष्टिः स्रष्टुराद्यावहति विधिहुतं या हविर्या च होत्री ।
ये द्वे कालं विधत्तः श्रुतिविषयगुणा या स्थिता व्याप्य विश्वम् ।
यामाहुः सर्वबीजप्रकृतिरिति यया प्राणिनः प्राणवन्तः ।
प्रत्यक्षाभिः प्रपन्नस्तनुभिरवतु, वस्ताभिरष्टाभिरीशः ।।

These eight forms may be explained as follows:

(1) यामाहुः सर्वबीजप्रकृतिः, i.e. पृथिवी;
(2) या सृष्टिः सष्टुराद्या, i.e. जलं, आपः;
(3) वहति विधिहुतं या हविः, i.e. अग्निः, तेजः;
(4) यया प्राणिनः प्राणवन्तः, i.e. वायुः;
(5) श्रुतिविषयगुणा या स्थिता व्याप्य विश्वम्, i.e. आकाशः;
(6)-(7) ये द्वे कालं विधत्तः, i.e. सूर्यः and चन्द्रः;
(8) या च होत्री, i.e. यजमानः ।

In this, there are three distinct groups:

(*a*) पंचभूत, the five Elements;
(*b*) चन्द्रसूर्य, the cosmic symbols of Hot and Côld;
(*c*) यजमानः, to be explained presently.

There is another verse recounting their eight forms:

अथाग्निः रविरिन्दुश्च भूमिरापः प्रभञ्जनः ।
यजमानः खमष्टौ च महादेवस्य मूर्तयः ।।

(Śabdakalpadruma, quoting Śabdamālā)

In classical mythology the अष्टमूर्ति form of Śiva was associated with अष्टपुष्पिका worshipper-formed by offering eight handfuls of flowers as mentioned by Bāṇa:

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पुलिनपृष्ठप्रतिष्ठितसैकतशिवलिंगाच भक्त्या परमया पंचब्रह्मपुरःसरां सम्यङ्मुद्राबन्धविहितपरिकरां ध्रुवागीतिगर्भाम् अवनि-पवन-वन-गगन-दहन-तपन-तुहिन-किरणयजमानमयी मूर्तीरष्टावपि ध्यायन्तीसुचिरम् अष्ट पुष्पिकामदात् ।

(हर्षचरित, प्रथम उच्छ्वास)

The *aṣṭamūrti* conception was rooted in Vedic symbolism. According to it Agni was identical with Rudra:

यो वै रुद्रः सोऽग्निः (शतपथ, ५।२।४।१३)

एष रुद्रः यदग्नि (तैत्तिरीय ब्रा० १।१।५।८-९)

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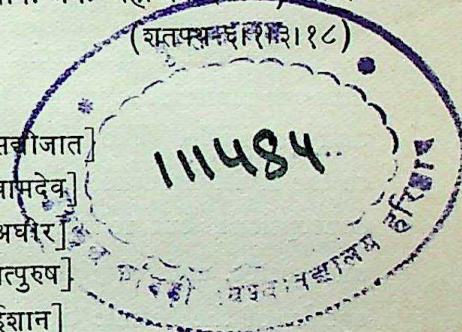
Why was Agni identified with Rudra? The reason is obvious. Rudra is so-called because it wept (यदरोदीत् तस्माद्रुद्रः) i.e. it suffered from hunger (अशनया), i.e. it wanted something to eat to satiate itself. As soon as it is satisfied it becomes शिव. It is in fact a symbolical description of Agni and Soma. Agni is eternally hungry for Soma. The oblation of Soma in Agni keeps Agni young and alive.

Agni is mentioned as having eight forms also:

तान्येतानि अष्टौ (रुद्रः शर्वः पशुपतिः उग्रः अशनिः भवः महान्देव ईशानः) अग्नि रूपाणि । कुमारो नवमः ।

(शतपथ ६।१।३।१८)

These have been explained as follows:

(1) सर्व or शर्व—पृथिवी मूर्ति [=सद्योजात]
(2) भव—जल मूर्ति [=वामदेव]
(3) रुद्र—अग्नि मूर्ति [=अघोर]
(4) उग्र—वायु मूर्ति [=तत्पुरुष]
(5) भीम—आकाश मूर्ति [=ईशान]
(6) महादेव—चन्द्र मूर्ति
(7) ईशान—सूर्य मूर्ति
(8) पशुपति—यजमान मूर्ति

Of these eight forms, there are three groups, as pointed out above, representing the three principal elements of manifestation. They are:

(a) भूतमात्र=पृथिवी जल तेज वायु आकाश
(b) प्राणमात्र=सूर्यचन्द्र symbolising प्राणापान
(c) प्रज्ञामात्र=मन, also called यजमान

The body is constituted of the five gross material elements, energised by the dual polarity of प्राण and अपान, and illumined by consciousness or मनस् ।

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Kalidāsa mentions होत्री or यजमान as one of the eight forms. The Mārkaṇḍeya Purāṇa refers to it as दीक्षित ब्राह्मण :—

सूर्यो जलं मही वह्निर्वायुराशमेवच ।
दीक्षितो ब्राह्मणः सोम इत्येतास्तनवः क्रमात् ॥ (५२।९)

Both are synonymous and have reference to यज्ञ as the organised system of manifestation. The *Manas* is the primary principle, the first centre which draws everything else into its vortex. मन is defined as the यजमान of the bodily यज्ञ :

Mind was the first-born of the cosmic order:

तपसस्तन्महिनाजायतैकम् ।

काम or desire is the seed of mind.

Mind is प्रज्ञामात्रा, functioning along with प्राणमात्रा and भूतमात्रा in each and every individual.

If we further examine these three principles, we have the following two categories.

(a) पृथिवी—जल—तेज—वायु ।
(b) आकाश—प्राण—अपान—मन

The first four Mūrties are gross, and the next ones are subtle. The gross or material represent the lower feet of Śarabha, they touch the earth and are visible. The subtle power symbolise the upper feet (ऊर्ध्वपाद) pointing to the invisible source of gross manifestation. ऊर्ध्व and अधः are not spatial conceptions, but relative levels of reference, ऊर्ध्व denoting the abstract and secret, and अधः the material visible from of the cosmos. The Gita speaks of the besmic tree as ऊर्ध्वमूल अधःशाखः Aśvattha, its roots having their being in the Divine Essence and its branches be coming these worlds. So are the feet of the Śarabha.

We find a reference to Śarabha in a hymn of the Rigveda:

पारावतं यन्पुरुसम्भृतं वस्वापावृणोः शरभाय ऋषिबन्धवे । (ऋग्वेद ८।१००।६

Griffiths rendering is: 'When thou didst open—Wealth heaped up by many, brought from far away to Śarabha, the Rishi's kin'. The first addresses Indra and Sāyaṇa considers Śarabha to be a Rishi of that name. But the stanza is susceptible of a symbolical meaning Rishi, according to the Satapatha (VI. 1. 1. 1.) explaining Yajurveda XV. 10, was the word symbol for असत् प्राण :—

असद्वा इदमग्र आसीत् । तदाहुः किं तदसदासीदिति ? ऋषयो वावतेऽग्रेऽसदासीत् । तदाहुः के ते ऋषय इति । प्राणा वा ऋषयः ।

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In the beginning was the असत् what was that असत् ? The Rishis were the असत् who were those Rishis ? The Rishis were the प्राणाः.

Now the original principal of manifestation which remained undifferentiated in the stage *ante principhiasm* is technically called असत् in the Vedic language :

देवाना युगे प्रथमेऽसतः सदजायत (ऋ० १०।७२।३)

"Existences in the earliest stage of Gods, sprang from non-existence.

Now what is ऋषि बन्धु i.e. the बन्धु of असत् ? The answer is found in the nāsdīya Sdīkta :

सतो बन्धुमसति निरविन्दन्
हृदि प्रतीष्या कवयो मनीषा ।

'Sages who sought with the power of thought in their hearts (i.e. within themselves) discovered the kinship of सत् in the असत् ? There is a *bandhutva* on *bandhana* tie of kinship between the सत् and असत्.

The सत् is manifestation, i.e. the eightfold form of Śiva (*ashta-murti*). He is Śarabha, the eight-footed animal (अष्टपाद मृग), Śarabha who is ऋषिबन्धु, in then the सत् which is akin to असत्, i.e. the Abstract is the Sarabha, whose eight feet symbolise the *Pañcha-Bhūtas, Prāṇā* Ahana and manas.

The Vedic Śarabha is but another name of Agni, who has eight forms as the eight vasus. In the words of the Ṛigveda VII. 100.6, it was the पारावतवसु unfolded by Indra for Śarabha, viz., Agni as the deer. Agni is called वृष्णमृग because it is hidden within the Bhūtas and must be sought there. Agni is प्राणाग्नि which is मृग्य in the भूताग्नि, its own form is कृष्ण, it becomes शुक्ल, when it is visible in the Bhūtas. Each object is believed to comprise for concentric and expansive bands, viz. हृत्पष्ठ, अन्तः पष्ठ, वहिः पृष्ठ and पारावतपृष्ठ, the remotest being the last, beyond which the object becomes invisible and ceases to have its field of material force. The interval between the हृत्पृष्ठ and the पारावत पृष्ठ is filled with the material of form in gross and subtle manifestations, which is called वसु or द्रविण, Agni is remembered as द्रविणोदा or रत्नधातम्, because it attracts or draws in वसु, द्रविण रत्न, i.e. the material particles within the several sheaths round the object upto the पारावतपृष्ठ. That is what is meant by Indra discovering the पारावत वसु for शरभ, the eight footed material form, which is ultimately a ऋषिबन्धु i.e. possesses the tie of kinship with the undifferentiated असत् प्राण, the substratum of all matter.

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# रीति कालीन कवियों की चित्र योजना

बच्चन सिंह, का० हि० वि० वि०

चित्रमयता भाषा का सहज धर्म है। गद्य और पद्य दोनों में शब्दों द्वारा चित्र निर्मित किए जाते हैं, किन्तु अपने विशिष्ट रूप, छंद, लय, संगीत आदि के कारण काव्य-चित्र अधिक मनोरम, भावोत्तेजक और रसार्द्र होते हैं। काव्य का क्षेत्र मूलतः भाव और अनुभूतियों का क्षेत्र है। भावानुभूतियों को पाठकों या श्रोताओं तक प्रेषणीय बनाने के लिये चित्र का माध्यम ग्रहण करना पड़ता है। गद्य का क्षेत्र मुख्यतः विचारों का क्षेत्र है। विचारों के प्रत्यक्षीकरण के लिये चित्रयोजना आवश्यक नहीं है। जहां कहीं गद्य में चित्रोपस्थापन किया भी जाता है वहाँ उसमें काव्य चित्रों की प्रसंगानुकूल ओजपूर्णता अथवा मधुर प्रतिध्वन्यात्मकता, गूढ़ातिगूढ़ संबंधों का भावात्मक प्रकाशन और रस की सांद्रता नहीं दिखाई पड़ती है। सच तो यह है कि सघन मनोवैज्ञानिक क्षणों (इन्टेसीफाइड साइकोलाजिकल मोमेंट्स) को काव्य की चित्रभाषा में जितने स्वाभाविक और प्रभावोत्पादक ढंग से अंकित किया जा सकता है उतने प्रकृत ढंग से उसे गद्यात्मक लय में नहीं बांधा जा सकता है।

साधारणतः काव्य चित्रों को दो श्रेणियों में बाँटा जा सकता है—लक्षित चित्र श्रेणी (डाइरेक्ट इमेजरी) और उपलक्षित चित्र श्रेणी (फिगरेटिव इमेजरी)। मुख्यतया बाह्य रेखाओं पर आधारित रहने के कारण लक्षित चित्रों को रेखाचित्र की अभिधा दी जा सकती है। रेखाचित्रों में आलंबन के रूप सौंदर्य और उसकी चेष्टाओं आदि को अंकित किया जाता है। काव्य में उपलक्षित चित्रों को बहुत अधिक महत्व दिया गया है। इन चित्रों में कवि अपने घनीभूत भावों को अप्रस्तुतों के सादृश्यविधान द्वारा बहुत सरस और मार्मिक ढंग से अभिव्यक्त करता है। उपलक्षित चित्रों में उसका अवचेतन मन इस तरह उद्घाटित होता है कि उसकी रुचि, अरुचि, आस्था, विश्वास, मान्यताओं आदि का अध्ययन सुगमतापूर्वक किया जा सकता है।[१] उपलक्षित चित्रों के मूल आधार उपमा और रूपक के सादृश्य विधान है। यहां पर हम अपने को लक्षित चित्रयोजना तक ही सीमित रखेंगे। यह सामान्यतः दो प्रकार की होती हैं—रेखाचित्र और वर्ण चित्र।

रेखाचित्र केवल स्थूल चाक्षुष चित्र नहीं है उसमें शब्द, स्पर्श, गंध रस को भी समाविष्ट समझना चाहिए। काव्य में केवल चाक्षुष चित्र का (वीजुअल इमेजरी), जिसमें शब्द, स्पर्श आदि लक्षित चित्र योजना का समावेश नहीं होता है विशेष साहित्यिक मूल्य नहीं आंका जाता। ऐसे चाक्षुष चित्र प्रायः जड़ और मोटे रूप में वस्तुमुखी होते हैं, और

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१ पश्चिम में इस तरह के कुछ विस्तृत अध्ययन प्रस्तुत किए गए हैं। द्रष्टव्य, Spurgeon, 'Shakspeare's Imagery'

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वे हमारे सूक्ष्म इंद्रियबोध को संतुष्ट करने में प्रायः अशक्त दीख पड़ते हैं। इन चित्रों की रेखाओं में जब शब्द, स्पर्श, गंध, आदि के रंग भर दिए जाते हैं तब इनकी प्रभावोत्पादकता बढ़ जाती है।

हमारे विवेच्य काल का विभाव क्षेत्र काफ़ी संकुचित है, इसलिये यहां यद्यपि चित्रों की विविधता और व्यापकता की कमी दिखाई पड़ेगी तथापि अपनी सीमा के भीतर इनमें पर्याप्त वैविध्य मिलेगा। पर रूढ़ियों के अत्यधिक आग्रह के कारण अभिसारिका, खंडिता आदि के चित्रों में प्रायः एकरूपता मिलेगी। रीतिकाल के अधिकांश कवि नायिका भेद और नख़शिख वर्णन की सीमाओं का अतिक्रमण नहीं कर सके हैं। अतः उनके चित्रों में घूम फिर कर नायक नायिका की विविध छवियां ही अंकित हुई हैं। नखशिख वर्णन के चित्र अत्यधिक पिटे हुए, परिपाटीग्रस्त और ताजगी शून्य हैं। लेकिन नायक नायिका के अनेक नयनाभिराम चित्रों से इनके काव्य भरे पड़े हैं, इसमें संदेह नहीं। इन चित्रों को लक्षित चित्र योजना (रेखाचित्र या चाक्षुष चित्र) तथा उपलक्षित चित्र योजना, दोनों में देखा जा सकता है।

रूप प्रेम के उत्पादन का प्रधान हेतु है, और हाव उसकी उत्तेजना का प्रधान उपकरण। लेकिन केवल रूप वर्णन से ही न तो इन कवियों की तृप्ति हो सकती थी और न उनके आश्रयदाता रसिकों की। हाव प्रेम प्रदर्शन तथा आकर्षण के लिये किया गया सचेष्ट व्यापार है। इनके वर्णन से एक ओर जहां भोगवृत्ति का पोषण होता है वहां दूसरी ओर प्रेम का उद्दीपन होता है। इनके चित्रों में बांधने वाली रेखाओं का विशेष महत्व होता है। इनके द्वारा रूपायित रीति काव्य के चित्र जड़ न होकर क्रिया विधायक (फंक्शनल) हो गए हैं। विहारी में इस तरह के चित्रों की भरमार है।

दोहों की लघु सीमा में न तो रेखाओं का विस्तार मिलेगा और न चित्रों की सांगोपांगता। फिर भी इनके लघु चित्रों में गहरी प्रभावोत्पादन क्षमता है। जिस तरह बिहारी के प्रेम वर्णन में आंखों और भौंहों का विशेष महत्व है उसी तरह इनके काव्य चित्रों में उनके व्यापारों का। इनके रेखाचित्रों में आंखों और भौंहों की अनेक भंगिमाओं की आड़ी तिरछी रेखाएं दिखाई पड़ेगी। नायिका की एक विशिष्ट भंगिमा, जो नायक के हृदय में घर कर गई है, कतिपय लघु रेखाओं में बाँध दी गई है—

नासा मोरि नचाय दृग, करी कका की सौंह।
काटे सी कसकति हिये, वहै कटीली भौंह॥

नाक का मोड़ना, आंखों का नचाना और काका की शपथ लेना इसमें लघु लघु तीन चित्र हैं। किन्तु इन्हें एक विशेष संदर्भ में गूँथ कर एक पूर्ण चित्र बना लिया गया है। इस चित्र में घनत्व (इटेन्सिटी) तो अवश्य है, किन्तु भावोद्रेक की अपेक्षित क्षमता नहीं है।

एक दूसरा क्रिया विधायक चित्र (फंक्शनल इमेज) देखिए—

बतरस लालच लाल की, मुरली धरी लुकाय।
सौंह करै, भौंहनि हंसै, दैन कहै, नटि जाय॥


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प्रथम पंक्ति चित्र की पृष्ठ भूमि के रूप में उपस्थित की गई है। दूसरी पंक्ति पाठकों के संमुख एक सजीव नाटकीय दृश्य उपस्थित करती है। इस छोटी सी पंक्ति में चार लघु लघु चित्र हैं, जो समन्वित रूप में नायिका की विशेष भाव भंगिमा को रूप देकर पाठकों के हृदय में भावात्मक काव्यानुभूति (पोइटिक इमोशन) उत्पन्न करते हैं। "बतरस लालच" से शब्द और रस का चित्र तो नहीं उपस्थित होता, लेकिन इससे उनका संकेत अवश्य मिल जाता है। पहले दोहे में नायक स्मृति के सहारे नायिका का विशेष चित्र उपस्थित करता है, किंतु स्वयं नायिका की अनुपस्थिति चित्र को वह प्रभावोत्पादकता नहीं प्रदान करती जो दूसरे चित्र में प्राप्त होती हैं। दूसरे दोहे में आश्रय ओर आलंबन दोनों पक्ष उपस्थित हैं। दूसरी पंक्ति से नायिका की प्रभावातिशयता उसकी प्रगलभता में मुखर हो उठी है। साथ ही नायक के बेचारेपन की व्यंजना भी बड़े ही कौशलपूर्ण ढंग से कर दी गई है। अस्तव्यस्तता का एक अत्यंत मोहक चित्र देखिए—

कहा लड़ैत दृग करे, परे लाल बेहाल।
कहुं मुरली, कहुं पीत पट, कहुं वैजंतीमाल।

पहले चित्र में नायक की मानसिक स्थिति का कथन मात्र है, दूसरे में प्रेमोद्दीपन की क्रीड़ा का उल्लेख है और तीसरे में हावजन्य प्रेम के प्रभाव का अंकन किया गया है। तीसरे दोहे की दूसरी पंक्ति कृष्ण की प्रेम विह्वलता का एक अतिशय भव्य चित्र उपस्थित करती है।

फिर भी सांकेतिकता के अभाव में जहां केवल हावों को एकत्र करना कवि का लक्ष्य रहा है वहां स्थूल चित्र योजना (पिक्टोरिअल इमेज) ही दिखाई पड़ती है, जो न काव्य सौंदर्य की दृष्टि से उत्तम कही जा सकती है और न प्रेम प्रदर्शन की दृष्टि से। यहां पर यह प्रदर्शन ग्राम्यत्व कोटि में उतर आया है—

भौंह उँचै आंचरु उलटि, मोर मोरि मुंह मोरि।
नीठि नीठि भीतर गई, डीठि डीठि सों जोरि॥

बिहारी के चित्रों में जो सफाई दिखाई पड़ती है वह उनके संग्रह और त्याग की क्षमता पर निर्भर है, जिसे दूसरे शब्दों में चयन कुशलता कह सकते हैं। उनके रेखा चित्रों में रूप सौंदर्य का सांगोपांग और स्थूल अंकन बहुत कम हुआ है। उन्होंने अधिकतर लघु लधु रेखाओं में नायिका की मनोरम चेष्टाओं को ही कलात्मक ढंग से बांधा है। यह इस तथ्य का द्योतक है कि आलंबन के उद्दीपनात्मक भंगिमाओं का जो स्पष्ट प्रभाव दिखाई पड़ता है वह प्रेम के उन्मादक पक्ष का सूचक है। वे सचेष्ट होकर प्रेम को उद्दीपक बनाने का प्रयास करते थे।

रीति की नपी तुली रेखाओं में न बंधने के कारण बिहारी में नायिकाओं की विशेष अवस्थाओं (मुग्धा, मध्या आदि) के चित्र कम मिलेंगे। मतिराम ने इस तरह की अवस्थाओं के चित्रोल्लेखन का सुन्दर प्रयास किया है। मुग्धा खंडिता का एक मनोरम चित्र देखिए—

लिखे कर के नख सों पग को नख, सीस नवाय के नीचे ही जोवै।
बाल नवेली न रूसनों जानति, भीतर भौन मसूसनि रोवै॥

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हाथ के नख से पैर के नख को कुरेदना, सिर झुका कर नीचे देखना, मसोस मसोस कर रोना—एक पूर्ण चित्र की संयोजक रेखाएँ हैं। इस चित्र में नायिका के मुग्धत्व और क्षोभ का सुन्दर अंकन हुआ है, और इसमें अभिव्यक्त कवि की भावानुभूति के साथ पाठकों का सहज तादात्म्य हो जाता है। इस चित्र का निर्माण बिहारी के चित्रों की भाँति हावों द्वारा न होकर अनुभावों द्वारा हुआ है। हाव चेष्टाएँ आयासजन्य होने के कारण बहुत कुछ कृत्रिम प्रतीत होती हैं, लेकिन अनुभाव मन पर पड़े हुए बाह्य प्रभावों से प्रेरित होने के कारण अन्तःकरण के सुख दुख के व्यंजक होते हैं। उक्त चित्र में प्रिय के अनौचित्यपूर्ण आचरण के प्रति नायिका का विरोध बहुत प्रभावशाली बन पड़ा है।

एक अभिसारिका की प्रसन्न मुद्रा देखिए—

प्यारे कह्यो हँसि आइहि सेजहि, प्यारी की ज्योति बिलासनि जागी।
नैन नवाय रही मुसकाय कै, हार हिये को सँवारन लागी।।

लज्जासंवलित प्रसन्नता को कितनी सफाई से व्यक्त किया गया है। नयनों का नीचा करना तथा हार सँवारना इन दो रेखाओं के बीच मुसकान का रंग इस चित्र को भावसंवलित बना देता है।

उपर्युक्त दोनों रचनाओं में क्रमशः मुग्धा खंडिता तथा मध्याभिसारिका नायिकाओं की शालीनता (माडेस्टी) व्यक्त करने के लिये कितने प्रभावोत्पादक व्यापारों का कुशलता-पूर्वक चयन हुआ है।

नायिका की उत्कंठा, चकपकाहट, ग्लानि, आश्चर्य आदि को रूप देने में देव ने अपनी दृष्टि का परिचय दिया है। मनोरम प्राकृतिक पृष्ठिभूमि, नायिका के विविध क्रिया कलाप और छाया प्रकाश के आनुपातिक संयोग को देव ने एक ही चित्र में बड़े आकर्षक ढंग से अनुस्यूत किया है—

खरी दुपहरी हरी भरी फरी कुंज मंजु,
गुंज अलि पुंजन की देव हियो हरि जाति।
सीरे नद नीर तरु सीतल गहरी छांह सोवैं,
परे पथिक पुकारैं पिकी करि जाति।।
ऐसे में किसोरी भोरी कोरी कुम्हिलाने मुख,
पंकज से पाय धरा धीरज सों धरि जाति।
सौहें धाम स्याम मग हेरति हँथेरी ओट,
ऊँचे धाम बाम चढ़ि आवति उतरि जाति।।

प्रथम दो पंक्तियों में तीन दृश्य हैं—खरी दुपहरी, हरे भरे सुन्दर कुंज और अलियों की गूँज। 'खरी' विशेषण दुपहरी की चिलचिलाहट को पूर्ण रूप से प्रत्यक्ष कर देता है। दूसरी दो पंक्तियों में चार दृश्य हैं—नदियों का शीतल जल, तरुओं की गहरी शीतल छाया, सोए हुए पथिक और कोकिल की पुकार। इन पंक्तियों में 'सीरे' और 'गहरी' विशेषण चित्र

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को गंभीरता और ताजगी से परिपूर्ण कर देते हैं। ज्येष्ठ के प्रकाश में छाया की गहनता और भी अधिक हो जाती है। दो विरोधी रंगों (छाया प्रकाश) के कारण चित्र की प्रभावोत्पादकता और बढ़ गई है, यह हुई चित्र की पृष्ठभूमि। इस सन्नाटे में उत्कंठिता नायिका ऊँचे धाम की ऊपरी छत से हथेली द्वारा सामने की धूप का निवारण करती हुई श्याम की बाट जोहती है, फिर नीचे उतर आती है। यह उतरना चढ़ना बराबर लगा रहता है। इस चित्र में प्राकृतिक पृष्ठिभूमि का केवल चित्र की दृष्टि से ही महत्व नहीं है, बल्कि उसका प्रतीकात्मक (सिम्बालिकल) अर्थ भी है। ज्येष्ठ की दुपहरी का वातावरण मिलन की दृष्टि से अत्यंत निरापद है, क्योंकि तरुओं की छाया में यात्री निश्चिन्ततापूर्वक सो रहे हैं। लेकिन इस चिलचिलाती धूप में भी उत्कंठा का आतिशय्य नायिका को घर के ऊपर नीचे चढ़ने उतरने के लिये बाध्य करता है। इस चित्र में शब्द, रूप, रस, स्पर्श और गंध सभी का न्यूनाधिक मात्रा में समावेश हुआ है।

संकेत स्थल पर प्रिय को न पाकर नायिका की स्तब्धता और किंकर्तव्यविमूढ़ता का एक अत्यंत मनोरम चित्र खींचते हुए देव ने लिखा है—

देव कछू रद बीरी दबी सु हाथ की हाथ रही मुख की मुख।

अनुभावों द्वारा चित्रयोजना में देव बेजोड़ हैं। अनुभाव का संबंध मन से होने के कारण इनके द्वारा अंकित चित्रों में मन की विविध दशाएं स्वतः अभिव्यक्त हो उठती हैं। देव की कविता में इस तरह के अनुभाव निर्मित चित्र अधिक हैं। यहां अनुभावों द्वारा निर्मित एक दूसरी सजीव चित्र कल्पना भी देखने ही योग्य है—

सुख दै बुलाइबन सूनौ दुख दूनो दियो,<br>
एकै बार उससे सरोस सांस सरकनि।<br>
औंचक उचकि चित चकित चितौत चहूँ,<br>
मुकरतहरानि थहरानि कुच थरकनि।<br>
रूप भरे भारे वे अनूप अनियारे दृग—<br>
कोरनि डरारे कजरारे बूंद ढरकनि॥<br>
देव अरुनई अरु नई रिसि छवि सुधा<br>
मधुर अधर सुधा मधुर की फरकनि॥

इस चित्र में ऊर्ध्व निःश्वास भरना, चकित होकर चतुर्दिक देखना, आंखों से कजरारी बूंदों का ढलना वियोग वेदना के द्योतक हैं। 'मुकुतहरानि थहरानि कुच थरकन' में देव ने कुच के प्रकंप से मुक्ताहल के हिलने का जो दृश्य अंकित किया है वह चित्र की मार्मिकता, प्रभावोत्पादकता और शोभा को द्विगुणित कर देता है। अनुभावों से प्रभावित जिस स्वाभाविक व्यापार पर कवि की दृष्टि गई है, वह पाठकों के मन में भी एक रागोद्रेक उत्पन्न करने में समर्थ है। नायिका की स्वाभाविक ललाई नए क्रोध से मिश्रित होने पर उसके लावण्य को और भी शोभन बना देती है।

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मतिराम के सरस और देव के भावोन्मेषपूर्ण चित्रों में भी प्रधानता बाह्य रेखाओं की ही है लेकिन इनमें खीझ व्यथा, उत्कंठा आदि मानसिक दशाओं को इस प्रकार अंकित किया कि शब्द, स्पर्श, गंध आदि का उनमें संनिवेश हो गया है। इनकी नायिकाओं के बाह्य क्रियाकलाप उनके सचेष्ट व्यापार नहीं हैं, वे विशेष मानसिक दशाओं के सूचक हैं। इसके परिणाम स्वरूप ये चित्र इंद्रियसंवेद्य हो गए हैं। किंतु जहां रूप सौंदर्य का चित्र उपस्थित किया गया है वहां ऐंद्रिय उत्तेजना की झलक साफ दिखाई पड़ती है।

जहां तक संश्लिष्ट चित्र कल्पना का संबंध है, इस काल में 'पद्माकर' का विशेष महत्व है। संश्लिष्ट चित्र उपस्थित करने में वे ब्योरों पर उतना ध्यान नहीं देते जितना प्रभावान्विति पर। होली से संबद्ध अनेक चित्रों में केवल रेखाओं की सफाई में ही चित्र कल्पना का उत्कर्ष देखने वाले आलोचकों, घनत्व, ताजगी और भावोत्तेजक क्षमता ढूंढने वाले अभ्यासियों और रूप, रस और गंध की खोज करने वाले काव्य रसिकों को समान रूप से मनस्तोष मिलेगा। इनका एक अति प्रसिद्ध कवित्त देखिए—

आई खेलि होरी घरै नवल किशोरी कहूँ,
बोरी गई रंग में सुगंधनि झकोरे है।
कहै पदमाकर इकंत चलि चौकी चढ़ि,
हारन के बारन तें फंद बंद छोरे है॥
घाघरे की घूमनि सु उरून दुबीचे दाबि,
आंगी हूँ उतारि सुकुमारि मुख मोरे है।
दंतनि अधर दाबि दूनरि भई सी चापि,
चौवर पंचौवर कै चूनरि निचोरे है॥

पद्माकर का यह चित्र अत्यंत शोभन और ऐंद्रिय है। एकांत स्थान में चूनर निचोड़ती हुई नायिका की स्वाभाविक भंगिमाएं अपने आप में अत्यधिक आकर्षक तो हैं ही, ये पाठकों के मन में भी भावात्मक अनुकूलत्व (इमोशनल रिस्पोन्स) उत्पन्न करने में पूर्ण समर्थ है।

**वर्ण चित्र**—काव्य में जहां नपी तुली बाह्य रेखाओं द्वारा चित्र निर्मित किए जाते हैं, वहां वर्णों द्वारा भी उनका निर्माण होता है। वर्ण योजना में कवि का अभिप्रेत केवल वर्ण योजना नहीं है, बल्कि इसके द्वारा अभीप्सित भावों की अभिव्यक्ति करना तथा इन्हें पाठकों तक प्रेषणीय बनाना है।

रीतिकालीन कवियों ने रंगों का चुनाव मुख्यतः तीन क्षेत्रों से किया है—

(१) प्रकृति के क्षेत्र से, (२) वस्त्राभूषणों के क्षेत्र से तथा, (३) पावक और दीप शिखा के क्षेत्र से। प्राकृतिक उपकरणों को दो कोटियों में रखा जा सकता है—आकाशस्थित (सूर्य, चन्द, नक्षत्र, बादल, बिजली आदि) तथा लता, पुष्प, पल्लव आदि (मालती, मल्लिका, कुंज, गुलाब, सोनजुही, बंधूक, जपा, बंधूक, गुल्लाला, कुंदकली, नवकिसलय, कमलपत्र इत्यादि)। वस्त्राभूषणों में रंगीन और कामदार साड़ियाँ, अंगिया,

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चुनरी तथा विविध आभूषण, मणि माणिक्य, विद्रुम, मुक्ता आदि संनिविष्ट हैं। पावक और दीपशिखा की ज्योति अंगद्युति को प्रकाशित करने के लिए ले आई गई है। इन समस्त उपादानों का उपयोग चित्र को आकर्षक और भावोद्दीपक बनाने के लिए किया गया है। उनका महत्व अपने आप में न होकर रंग के प्रभाव को आकर्षक और मादक बनाने में है। सच तो यह है कि रंग तो गिने गिनाए रहते हैं, चित्रकार की सफलता उनके आनुपातिक मिश्रण और औचित्यपूर्ण चुनाव पर निर्भर करती है। रीति काव्यों में वर्ण योजना के प्रायः पाँच प्रकार मिलते हैं—

१—नायिका का आंगिक वर्ण

२—अनुरूप वर्ण योजना (मैचिंग कलर)

३—वर्णों का मिश्रण (कांबिनेशन आफ कलर)

४—प्रतिरूपवर्ण योजना (कांस्ट्रास्टिग कलर)

५—वर्ण परिवर्तन (चेंज आफ कलर)

नायिका के अवयवों के रंग निर्देश के निमित्त जिन उपकरणों का उपयोग किया गया है वे बहुत कुछ वर्णनात्मक हो गए हैं। ऐसी स्थिति में वे ऐंद्रिय अनुभूति जागरित करने में अशक्त हैं। उन्हें रूढियों के अंतर्गत ही समझना चाहिए। कंचन, केसर, सोनजुही, बिजली आदि के रंगों द्वारा नायिका के शरीर का जो रंग निर्देश किया गया है वह परंपरा-भुक्त परिपाटी पर आधारित है। उदाहरणार्थ चरणों के लिये यह कहना कि 'विद्रुम और वंधूक जपा गुललाला गुलाब की आभा लजावति', तथा 'कौहर कौंल जपा दल विद्रुम का जितनी जो वंधूक में होती हैं' परिगणन परिपाटी के द्योतक हैं।

जड़ वर्णों को जब कवि अपने प्रयोग से जीवंत बना देता है तब कविता भी प्राणवान हो उठती है। रीतिकाल के कुछ कवियों ने रंगों में इस तरह की प्राणप्रतिष्ठा कर नायिका के लावण्य को अत्यंत प्रभावोत्पादक ढंग से मूर्तिमान किया है। यहाँ कुछ उदाहरण दिए जाते हैं—

पाँव धरै अलि ठौर जहाँ तेहिं ओर ते रंग की धार सी धावति।

—सुन्दरी तिलक, छं० ५

भीतर भौन ते बाहिर लौं द्विजदेव जुन्हाई की धार सी धावति।

—वही, छं० ११

इन पंक्तियों में अलग दो रंगों का चुनाव किया गया है—लाल और श्वेत। पाँव की प्रकृत ललाई के लिये रंग की लाली और शरीर की द्युति के लिये ज्योत्सना की तरलता उपस्थित की गई है। नायिका जहाँ पैर रखती है वहाँ से रंग की धारा सी दौड़ पड़ती है। दौड़ती हुई रंग की धारा हमारे संमुख जो चित्र उपस्थित करती है उसमें पैरों की सुकुमारता कोमलता और ललाई का जो भावात्मक ऐंद्रिय बोध होता है उससे नायिका के समस्त सौंदर्य की भी एक मनोरम कल्पित झांकी मिल जाती है। दूसरा चित्र पहले की अपेक्षा अधिक ऐंद्रिय

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और सौंदर्यबोधात्मक है। 'जुन्हाई की धार' 'रंग की धार' की अपेक्षा मूर्त प्रत्यक्षीकरण में अधिक समर्थ है, क्योंकि हमारे दैनिक जीवन से इस का गहरा लगाव है। ज्योत्सना में स्वयं एक प्रवाह होता है, जो अपने आप रंग में ही नहीं होता। 'जुन्हाई की धार' पद हमारे सामने शुभ वर्णी, तन्वंगी, ज्योति की तरंगों पर तैरती हुई सी एक अशेष सुकुमार सुन्दरी का भावोद्रेक पूर्ण चित्र प्रत्यक्ष करता है। घर के भीतर से बाहर तक (जहां तक नायिका आती है) चांदनी की दौड़ती हुई धारा उसके असाधारण सौंदर्य और अंग ज्योति की सूचना देती है।

**अनुरूप वर्ण योजना**—अनुरूप वर्ण योजना के अंतर्गत वे चित्र आते हैं जिनमें बहुत कुछ मिलते जुलते रंगों (मैचिंग कलर्स) का प्रयोग इस ढंग से होता है कि सौंदर्य में एक नवीन आकर्षण आ जाय। कुछ उदाहरण देखिए—

सहज सेत पचतोरिया, पहिरे अति छबि होति।
जल चादर के दीप लौं जगमागाति तन जोति॥

बिहारी

अंगन में चंदन चढ़ाय घनसार संग,
सारी छीर की सी आभा उफनाति है।

मतिराम

दास पग पग दूनो देह दुति दगदग,
जग जग ह्वै रही कपूर धूर सारी पर।

भिखारीदास

इन तीनों चित्रों में श्वेत रंग की साड़ी और गोरे रंग के शरीर में रंग की एकरूपता ले आई गई है। इस वर्ण योजना का प्रयोजन है अनुकूलवेश विन्यास द्वारा नायिका की रूपानुभूति का भावात्मक चित्रण। श्वेत साड़ी के प्रभाव से तीनों कवियों की नायिकाओं की अंगदुति एक नई ज्योति से जगमगाती हुई दिखाई दे रही है। अनुरूप वर्ण योजना के सहारे नायिका को ऐंद्रिय आकर्षण का केंद्र बताते हुए उसके वैभव विलास को भी अंकित किया गया है।

**वर्णों का मिश्रण (कांबिनेशन आफ कलर)**—वर्णों के मिश्रण में कवि को दुहरे दायित्व का निर्वाह करना पड़ता है। एक ओर उसे चित्र विशेष के अनुकूल रंगों का चुनाव करना पड़ता है दूसरी ओर रंगों के आनुपातिक मिश्रण पर भी ध्यान देना पड़ता है। विहारी और देव में विविध रंगों के मिश्रण की कला विशेष रूप से दिखाई पड़ती है। इन दोनों में भी रंगों की छायाओं (शेड्स आफ कलर) की अद्भुत पकड़ में बिहारी की दृष्टि अधिक अचूक है।

बिहारी का रंग परिज्ञान तथा उचित रंगों के मेल की क्षमता "सतसई" के प्रथम दोहे से ही परिलक्षित होने लगती है। राधिका के पीतवर्ण की छाया में श्री कृष्ण का श्यामवर्ण हरा हो जाता है। इस दोहे में राधिका की शोभा, सौंदर्य और अंगद्युति की

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अलौकिकता को उभार कर सामने रखना ही कवि का मुख्य प्रयोजन है। इसी तरह कई रंगों के मेल से बांसुरी की इंद्रधनुषी शोभा देखिए—

अधर धरत हरि के परत ओठ डीठि पट जोति ।
हरित बांस की बांसुरी, इन्द्र धनुष छबि होति ।।

मूलवर्ण केवल पांच होते हैं—श्वेत, रक्त, पीत, कृष्ण ओर हरित । "श्वेतो रक्तास्तथा पीतः कृष्णो हरितमेव च मूलवर्णाः तमाख्याताः पंच पार्थिव सत्तम् ।" बांसुरी के हरे रंग पर आंखों के श्वेत कृष्ण रंग, ओठ के लाल रंग और पीतांबर के पीत वर्ण की छाया पड़ती है, इनके संमिश्रण से वंशी इन्द्र धनुष के रंग की हो जाती है। यहां पर वर्ण तरंगों से श्रीकृष्ण की एक अत्यंत मोहक भंगिमा की व्यंजना भी हो जाती है।

वयः संधि की अवस्था को बिहारी ने "धूपछांह" के रंग में देखा है—

छुटी न सिसुता की झलक, झलक्यो जोबन अंग ।
दीपति देह दुहून मिलि, दिपत ताफता रंग ।।

"धूपछांह" के रंग संकेत से वयःसंधि की रेशमी शोभा कितनी भावपूर्ण हो गई है !

देव के वर्ण चित्रों में कई रंगों के मिश्रण प्रायः कम दिखाई पड़ते हैं। इन्होंने प्रायः एक रंग से ही चमत्कार प्रदर्शन का प्रयास किया है, इनके चित्रों में रंगों का वैभव तो दिखाई पड़ता है, किन्तु उनके मिश्रण द्वारा नए भावात्मक चित्र खड़े करने में उनका मन नहीं रम सका है। एक उदाहरण है—

मांग गुही मोतिन भुअंग ऐसी बेनी उर ,
उरज उतंग औ मतंग गति गौन की ।
अंगना अनंग कैसी पहिरे सुरंग सारी ,
तरल तुरंग दृग, चाली मृग दौन की ।
रूप की तरंगनि बरंगनि के अंगनि से ,
सोधें की अरंग लौं तरंग उठे पौन की ।
सखी संग रंग में कुरंग नैनी आवै तोलौं ,
कैयो रंगमई भूमि भई रंग भौन की ।।

आइये पहले इस पर "रूप भेद" की दृष्टि से विचार करें। "रूप भेद" के अनुसार केवल रूपाधायक अंगों को ही अंकित करना चाहिए, लेकिन प्रारंभिक पंक्तियों में कवि ने नखशिख वर्णन की परंपरा के अनुसार रूढ़ अंगों का भी उल्लेख किया है। आवश्यकतानुसार इसमें हल्के गहरे रंगों का स्पर्श भी नहीं दिखाई पड़ता है, इसलिये "प्रमाण" की दृष्टि से इस चित्र का औचित्य नहीं ठहराया जा सकता। रंगों की तड़क भड़क ने चित्र के सौंदर्य को बहुत कुछ विकृत कर दिया है। भाव योजना की दृष्टि से भी इसका विशेष महत्व नहीं आंका जा सकता। हां, कुछ पंक्तियों में लावण्य की सुष्ठु योजना की गई है। सादृश्य और "वर्णिका भंग" की दृष्टि से भी इस चित्र को महत्वपूर्ण नहीं कहा जा सकता

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इस चित्र में नायिका के रंग रूप द्वारा बहुरंगी रंगभूमि की कल्पना को साकार करने का प्रयास तो अवश्य किया गया है किन्तु इसमें स्वयं रंगों का महत्व इतना अधिक हो गया है कि ऐंद्रिय अनुभूति (सेंसुअस फालिंग) की अपेक्षित अन्विति नहीं हो पाई है।

तीन रंगों के मेल से पद्माकर ने जो चित्र खींचा है उसमें जो ताजगी (फ्रेशनेस) और वातावरण निर्माण की क्षमता है वह कम चित्रों में दिखाई पड़ती है—

जाहिरै जागति सी जमुना जब बूड बहै उमहै वह बेनी।
त्यों पदमाकर हीर के हारनि गंग तरंगन को सुखदेनी॥
पांयन के रंग सों रंगि जाति सी भांति ही भांति सरस्वति सेनी।
पैरै जहां ही जहां वह बाल तहां तहां ताल में होत त्रिबेनी।

इस चित्र में कहीं हल्के कहीं गहरे रंग स्पर्श से नायिका की छवि अंकित की गई है। 'बूड़ बहै उमहै' शब्दों से गतिशील यमुना का दृश्य आंखों के संमुख उपस्थित हो जाता है हीरे के हार के स्पर्श से गंगा की तरंगों की भांति ताल का जल भी शुभ्र हो जाता है। पांवों का रंग जल को सरस्वती के रंग में रंग देता है। यहां पर नायिका का सौंदर्य रेखाओं में नहीं बल्कि रंगों में बांधा गया है। चित्र की दृष्टि से यह 'वर्णिका-भंग' का श्रेष्ठ उदाहरण है। वास्तव में कवि यहां पर एक अत्यधिक सुंदरी नायिका का रूप खड़ा करना चाहता है। विविध रंगों के मेल से सौंदर्य संगम का नयनाभिराम दृश्य उपस्थित करने में उसे यहां पूर्ण सफलता मिली है, इसमें संदेह नहीं।

बिहारी नायिका की अंगुली का वर्णन करते हुए त्रिवेणी का दृश्य उपस्थित करते हैं।

गोरी छिगुनी नख अरुन छला स्याम छबि देय,
लहत मुकुति, रति पलक यह नैन त्रिबेनी सेय।

एक चित्र में अंगुली की गुराई, नख की ललाई और उसमें पहने हुए लोहे के छल्ले को एक स्थान पर एकत्र कर देने मात्र से रगों को एकान्वित नहीं किया जा सकता। इससे न तो कोई मूर्त प्रत्यक्षीकरण हो पाता है, और न प्रभावोत्पादन की क्षमता ही व्यक्त हो पाती है।

इस प्रकार स्पष्ट है कि विविध रंगों के मिश्रण से नायक अथवा नायिका का जो रूप चित्रण रीति काव्य में किया गया है उसके मूल में कवि का उसे मोहक बनाने का ही दृष्टिकोण निहित है। इस रंग मिश्रण के द्वारा भी नायिका के वैभव और रूप श्री दोनों को अभिव्यक्त किया गया है।

**विरोधी वर्ण योजना (कांट्रस्टआफ कलर)**—विरोधी रंगों का प्रयोग यद्यपि इस काल के कवियों ने कम किया है फिर भी कुछ स्थलों में इनके द्वारा नायिका की जगमगाती छवि के बड़े ही आकर्षक चित्र अंकित किए गए हैं।



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इस कला में भी बिहारी सबसे प्रवीण हैं। इस तरह के उनके दो चित्र दिए जाते हैं—

छप्पो छबीलो मुख लसै गीले आंचर चीर।
मनौ कलानिधि झलमलै, कालिंदी के नीर।
सोनजुही सी जगमगै, अंग अंग जोबन जोति।
सुरंग कुसुंमी चूनरी, दुरंग देह दुति होति।

पहले दोहे में नीले और श्वेत रंग का विरोध है और दूसरे में पीले और लाल का। एक में उक्त विषया-वस्तुत्प्रेक्षा और दूसर में पूर्णोपमा अलंकार द्वारा चित्र को अच्छी तरह निखार दिया गया है। पहले में रूपाधायक अंश मुख्य है दूसरे में संपूर्ण अंग की कांति। इस तरह नायिका की जगर मगर करती हुई अंग ज्योति के वर्णन द्वारा उसका संपूर्ण सौंदर्य प्रतिभासित हो उठा है।

लेकिन जहाँ पर बिहारी ने चमत्कार प्रदर्शन के निमित्त गोरे मुख में चंदन की विंदी को मद की लाली की पृष्ठभूमि में उभार दिया है अथवा नीलमणि जटित लौंग को चंपा कली पर बैठा हुआ भौंरा कह कर पीले और काले दो विरोधी रंगों द्वारा चित्र को रूप देने का प्रयास किया है वहाँ न तो काव्य सौंदर्य प्रस्फुटित हो पाया है और न कोई रूप ही संमूर्तित हो सका है।

**वर्ण परिवर्तन**—वर्ण परिवर्तन मानवीय भावों का बैरोमीटर तथा मनःस्थितियों का प्रकाशक व्यापार है। इसकी गणना सात्विक अनुभावों के अंतर्गत होनी चाहिए। पश्चिम के कवियों ने चेहरे में लज्जा की ललाई (ब्लश) का प्रचुर वर्णन किया है। रीति कवि गिने गिनाए अनुभावों के चतुर्दिक चक्कर लगाने के कारण स्वतंत्र रूप से अनुभावों की अभिव्यक्ति प्रायः नहीं कर सके हैं। लेकिन ढूँढने पर वर्ण परिवर्तन के कुछ अच्छे उदाहरण मिल जाते हैं।

नायक ने मौलश्री की माला सखी द्वारा नायिका के पास भेजी है। सखी नायिका को माला पहना कर आई है और नायक से नायिका की दशा का वर्णन करती है—

पहिरत ही गोरे गरें, यों दौरी दुति लाल।
मनौ परसि पुलकित भई, मौलसिरी की माल।।
—बिहारी

मौलश्री के स्पर्श से उसे नायक के स्पर्श का अनुभव हुआ, अतः उसका सारा शरीर रोमांचित हो उठा। यहीं नहीं माला गले में पड़ते ही उसकी अंगदीप्ति में ललाई दिखाई देने लगी। गोरेपन का सहसा बदलकर ईषत् लाल हो जाना नायक के प्रति उसके प्रेम की अभिव्यक्ति ही है।

लज्जा के कारण लाल होने का एक दूसरा चित्र देखिए—

ज्यौं ज्यौं परसत लाल तन, त्यों त्यों राखे गोय।
नवल बधू डर लाज तें, इंद्रबधू सी होय।।
—मतिराम

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यह नवोढ़ा नायिका का उदाहरण है। प्रिय के स्पर्शमात्र से वह डर और लज्जा के कारण संकुचित होती जाती है और उसका रंग इंद्रबधू के रंग का हो जाता है। 'इंद्रबधू' शब्द हमारे सामने केवल वर्णपरक परिवर्तन ही नहीं उपस्थित करता, बल्कि अपने में सिमटती हुई अत्यन्त सुकुमार बधू का प्रत्यक्षीकरण भी कराता है। इंद्रबधू भी स्पर्श से ही संकुचित हो जाती है।

शरीर के रंग की छाया से नायिका की माला का रंग बदल गया है, किन्तु अज्ञात यौवना होने के कारण उसे इसका पता नहीं चलता। इस वर्ण परिवर्तन का एक अत्यंत मार्मिक चित्र उपस्थित करते हुए 'बेनी प्रवीन' ने लिखा है—

काल्हई गूंथि बबाकि सौं मैं, गजमोतिन की पहिरी अति आला।
आई कहां ते इहां पुखराज की, संग गई यमुना तट बाला॥
न्हात उतारी हौं "बेनी प्रवीन" हंसै सुनि बैनन नैन रसाला।
जानत ना अंग की बदली, सब सों बदली बदली कहै माला॥

बाबा की शपथ खाकर मैं सच कहती हूँ कि अभी तो कल ही मैंने गजमोतियों की माला गूँथ कर पहनी थी। यह पुखराज की माला कहां से आ गई? क्या यमुना तट पर स्नान करते समय किसी की माला से बदल तो नहीं गई?

उस बेचारी मुग्धा नायिका को क्या पता कि शरीर की पीताभ छाया के कारण गजमुक्ताओं की श्वेत माला का रंग कुछ इस प्रकार बदल गया है कि उससे पुष्पराग मणियों की माला की भ्रान्ति होती है। यहां पर वर्ण परिवर्तन के सहारे नायिका के सौंदर्य की जो व्यंजना की गई है वह अतिशय मनोरम और हृदयग्राही है।

बिहारी के उपर्युक्त दोहे में कोई दूती नायक से नायिका की प्रेमानुभूति का चित्र खींचकर नायक के मन की ललक को और भी अधिक बढ़ा देने का उपक्रम कर रही है। मतिराम के दोहे में नायिका को विशेष परिस्थिति में डालकर उसे छुई मुई दिखाने का अभिप्राय उसके प्रति नायक के आकर्षण को और भी तीव्र बना देना है। बेनी प्रबीन का वर्ण परिवर्तन द्वारा नायिका के सौंदर्य के अंकन का उद्देश्य भी इससे भिन्न नहीं है। चाहे अनुरूप वर्ण योजना हो चाहे प्रतिरूप वर्ण योजना सभी वर्ण योजनाओं द्वारा मुख्य रूप से नायिका के सौंदर्य को आकर्षणमूलक और उन्मादक बनाने का प्रयास किया गया है। कवि के चेतन मन का निर्माण उसकी सम-सामयिक परिस्थितियों द्वारा होता है। सामंतीय वातावरण में इसी तरह के रूप लावण्य और वैभव समन्वित नायिकाओं के वर्णन की आवश्यकता भी थी।

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# कला और उसका रूप

## रामचन्द्र शुक्ल, का० हि० वि० वि०

कला पर अनेक विद्वानों ने आदि काल से असंख्य विचार व्यक्त किये हैं और अभी भी इसमें कमी नहीं हुई है। हर एक विद्वान कला पर बिना अपने विचार व्यक्त किये नहीं रहता और प्रत्येक विद्वान कुछ नई बात कहने का प्रयास करता है और उसे ही सत्य समझता है। अर्थात् कला पर "जितने मुंह उतनी बातें" वाली कहावत पूर्णतया चरितार्थ होती है। यह कहना अगर असम्भव नहीं तो कठिन अवश्य है कि कभी इसका अन्त होगा या कोई निश्चित परिभाषा बन सकेगी। इससे तो यही व्यक्त होता है, कि कला की कोई निश्चित परिभाषा न आज तक बनी है, न बन सकेगी। या हम यूँ कहें, कला प्रगतिशील है, नये रूप रखकर प्रत्येक बार सामने आती है और प्रत्येक बार उसकी नई परिभाषा बनती है। आज तक बनी हुई सभी परिभाषायें हमारे सन्मुख हैं। अक्सर इन्हीं में से किसी एक को हम चुन लेते हैं और कुछ नये शब्दों में उसे रख कर हम समझते हैं कि हमने एक नई परिभाषा बना ली है, पर यह किसी से अधिक समय तक छिपा नहीं रहता। सच बात तो यह है, कि कला के बारे में अब तक इतना अधिक सोचा जा चुका है कि कोई नई बात कहने का प्रयास करना खतरे से खाली नहीं। मैं तो यहां केवल यही विचार करना चाहता हूं, कि आज का कलाकार रचना करने में अपने सन्मुख क्या ध्येय रख सकता है, जो आज के तथा भावी समाज के हित में हो और मानव संस्कृति को उत्तरोत्तर प्रगति के पथ पर ले जा सके।

आइये विचार करें कि चित्रकार किस प्रकार के चित्र बना सकता है। साधारणतया सब से सरल तो यही है, कि जो चीजें हम देखते हैं, उनका चित्र हम सरलता से बना सकते हैं। दूसरा प्रयास यह हो सकता है कि चीजों को अपने मन के अनुसार सजा कर तब उसका चित्रण करें। तृतीय यह कि चीजों को अपनी इच्छानुसार सुधार कर बनायें। चतुर्थ यह कि अपनी कल्पना से उसमें कुछ और जोड़ें। पंचम यह कि आखों देखी चीजों को न चित्रित कर केवल काल्पनिक वस्तुओं का चित्रण करें और अन्तिम यह कि बिना सोचे विचारे अपनी तूलिका को कागज पर अनायास चलने दें और जो कुछ बन जाय बनने दें। इसके अतिरिक्त और जो कुछ भी हो सकता है, वह यही कि किसी कवि की कविता, किसी कथा या किसी प्रकार के अन्य कथागत साहित्य के सहारे चित्र रचना की जाय। इस प्रकार सम्भवतः इन्हीं सात प्रकार के चित्र रचना की हम कल्पना कर सकते हैं और आज तक बने संसार के सभी चित्र इनमें से किसी न किसी कोटि में रक्खे जा सकते हैं। अभी तक सबसे अधिक चित्र रचना कविता, कथा तथा अन्य साहित्यिक रचनाओं के आधार पर ही हुई है और आज भी यह होती जा रही है। वैसे संसार के कलागत इतिहास में उपरोक्त सभी प्रकार के चित्र, कम चाहे अधिक, कभी न कभी अवश्य बनते रहे हैं और साधारणतया इनसे बाहर निकलना मुश्किल है। तो आज का कलाकार क्या करे ?

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दो बातें इस दृष्टि से महत्वपूर्ण हैं—कलाकार चित्र क्यों बनाता है और किसके लिये बनाता है। सृष्टि के आदि काल से ही मनुष्य कला के कार्यों में रुचि लेता आया है और इसी आधार पर हमारी आज की संस्कृति तथा सभ्यता का निर्माण हुआ है। हम यही कह सकते हैं कि रचना मनुष्य की एक जन्म जात स्वाभाविक प्रवृत्ति है। किसी न किसी रूप में यह सभी में विद्यमान रहती हैं। रचना करने के अनेक माध्यम हैं, और चित्रकला भी उनमें से एक है। अक्सर देखा जाता है, छोटे बालकों में आरम्भ से ही यह प्रवृत्ति विद्यमान रहती है। यही प्रवृत्ति किसी किसी में प्रधान रूप से शक्तिशाली हो पड़ती है और ऐसा ही व्यक्ति कलाकार हो जाता है। इसी बात को दूसरी तरह से भी कहा जा सकता है कि प्रत्येक मनुष्य को रचना के कार्य में आनन्द की प्राप्ति होती है और इसी मूल प्रवृत्ति के कारण वह अनेक प्रकार के कार्य करता है। सुख और आनन्द ही मनुष्य का चरम लक्ष्य है, जीवन में और उसके प्रत्येक कार्य में यह ध्येय किसी-न-किसी रूप में विद्यमान रहता है।

दूसरी बात यह है कि मनुष्य मस्तिष्क का स्वामी होने के कारण सदैव से अपने को बचाये रहने के लिये नाना प्रकार के प्रयोजन करता रहा है। इसके लिये उसने नाना प्रकार के उपकरणों का आविष्कार किया और आज भी करता जा रहा है। कलाओं का भी इसी दृष्टि से महत्वपूर्ण स्थान है। कला भी मनुष्य के समाज को बनाये रखने में महत्वपूर्ण योगदान देती है। कलाओं के द्वारा मनुष्य निरन्तर प्रगति करता जा रहा है और जंगली जीवन से ऊपर उठकर आज महत्वपूर्ण मानसिक तथा आध्यात्मिक जीवन व्यतीत कर रहा है, जो जानवरों को उपलब्ध नहीं। कितने जानवर सृष्टि से सदा के लिये गायब हो गये पर मनुष्य अपने मस्तिष्क के सहारे आज भी उसी प्रकार विद्यमान है।

इन्हीं दो स्वाभाविक प्रवृत्ति के कारण कला मनुष्य के जीवन का एक महत्वपूर्ण अंग बन गई है और उसे विकसित करने में आज भी पूर्णतया समर्थ है। यही प्रवृत्ति मनुष्य को कला के पथ पर अग्रसर करती है और अनायास वह कलाकार बन जाता है, यद्यपि कलाकार यह नहीं जान पाता कि वह इस कार्य में क्यों रुचि लेता है। वह तो इतना ही जानता है कि उसे इस कार्य को करने में सुख मिलता है, मज़ा आता है या आनन्द प्राप्त होता है। कभी कभी तो उसे इसका भी बोध नहीं होता और वह अनायास रचना के कार्य में संलग्न हो जाता है। इसकी उसे एक स्वाभाविक आदत सी बन जाती है और बिना किसी विशेष ध्येय के वह कला का कार्य करता जाता है। वह यह जान ही नहीं पाता है कि अपनी रचनाओं को दूसरों के सन्मुख रखने की भी उसकी इच्छा होती है और कभी कभी तो यह बहुत ही बलवान होती है। ऐसा वह क्यों चाहता है ?

प्रशंसा मनुष्य का वह महत्वपूर्ण गुण है, जो उसे पुनः कार्य करने के लिए और भी अधिक शक्ति के साथ प्रेरित करता है। जैसे किसी मशीन में तेल पड़ने से वह और भी सरलता तथा तीव्रता से चलने लग जाती है, वही महत्व है प्रशंसा का, मनुष्य को प्रगतिशील बनाए रखने में। कलाकार योगी की भांति समाधिस्थ होकर अपनी पूरी शक्ति केन्द्रित कर कला की रचना करता है और उसके पश्चात् वह एकाएक अपने को खाली और शक्ति

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से क्षीण पाता है। ऐसे समय उसे पुनः अपनी शक्ति को बटोरने की आवश्यकता होती है और प्रशंसा यहां महत्वपूर्ण कार्य करती है। कलाकार प्रशंसा का भूखा रहता है और जब समाज से उसे यह भी नहीं प्राप्त होता तभी वह कला का कार्य छोड़ देता है। इससे उसकी इतनी हाँनि नहीं होती जितना उस समाज का जिसमें वह रहता है। यही कारण है कि प्रगतिशील समाज या देश कभी कलाकार को इससे निराश नहीं करता और कुछ न दे सकने पर इतना तो अवश्य देता है। जो समाज कलाकार को इससे वंचित करता है वह स्वयं नष्ट हो जाता है, काल कवलित हो जाता है। आलोचना का केवल यही महत्व है कि वह कलाकार को अवगत करावे उसकी रचना शक्ति से और उसका मार्ग और भी प्रशस्त करे। इसके अतिरिक्त कला के क्षेत्र में आलोचना का कुछ भी महत्व नहीं।

कलाकार स्वाभाविक प्रवृत्ति के कारण चित्र-रचना में संलग्न होता है और इससे उसे सुख, मजा या आनन्द प्राप्त होता है। प्रशंसा से उसे प्रेरणा मिलती है अपने कार्य को प्रगतिशील बनाने में। समाज उसे प्रशंसा देकर अपने जीवन को और भी अधिक प्रगतिशील सुखी तथा समृद्ध बनाता है। कलाकार को प्रशंसा देकर वह अपना कर्तव्य करता है और वह भी अपने ही लिये। कलाकार समाज की एक निधि है और इसीलिये इतना महत्वपूर्ण है। कलाकार अपने को तो सुखी करता ही है समाज भी सुख प्राप्त करता है।

पर कलाकार की कैसी रचना से सुख, आनन्द तथा प्रगति प्राप्त होती है यह और भी विचारणीय है। कलाकार स्वयं यह कभी भी सोच नहीं पाता कि उसे कैसी रचना में सबसे अधिक सुख या आनन्द मिलता है। वह तो जब जब रचना के कार्य में संलग्न होता है उसे सुख मिलता है। रचना मात्र ही उसके सुख की वृद्धि करता है। शायद सबसे अधिक सुख उसे उस समय ही प्राप्त होता है जब उसका अन्तः तथा बाह्य चित्र में पूर्ण एकता प्राप्त करते हैं, अर्थात् जब उसका चित्र उसके अन्तर में उपजे चित्र का प्रतिरूप बन पाता है, पर ऐसा अक्सर कम होता है, क्योंकि यदि एक बार भी कलाकार पूर्ण रूप से ऐसा चित्र बनापाता तो शायद आगे उसे चित्र बनाने की आवश्यकता न पड़ती। वह बार बार चित्र बनाता है, पर कुछ न कुछ बाकी रह जाता है, जो उसके अन्तः में मौजूद है, अर्थात् चित्र के माध्यम द्वारा वह अपने अन्तः का प्रत्यक्ष रूप देखना चाहता है, इसी को हम आत्म-दर्शन, या आत्म ज्ञान कह सकते हैं। यही कलाकार का चरम लक्ष्य होता है। और बातें तो केवल इसी एक लक्ष्य के विकार मात्र ही हैं। इसलिये हम यह कह सकते हैं, कि कलाकार आत्म-दर्शन के हेतु चित्र के रूप में अपनी अभिव्यक्ति करता है। यद्यपि यह बात कलाकार सोच कर नहीं करता यह भी एक स्वाभाविक प्रवृत्ति ही है और इससे उसे अत्यन्त आनन्द का लाभ होता है। यह कहना कठिन है कि क्यों। शायद यहीं ही रहस्य शब्द चारितार्थ होता है और प्रश्न उठता है अन्तर क्या वस्तु है, जिसका उत्तर आज तक कोई निश्चित रूप में नहीं दे सका है। अन्तर क्या है, क्या चाहता है, कहना कठिन है, पर उसका प्रभाव तो साफ है। प्रत्येक कलाकार इसका अनुभव करता है यदि सचमुच उसे कला के कार्य में आनन्द आता है तो। अन्तर क्या है यह कहना कठिन है, पर कला उसको प्रगट करने का स्वयं एक माध्यम है। कलाकार की कला उसके अन्तर का एक रूप है, प्रतीक है, जिसे प्रत्यक्ष देखकर हम जान सकते हैं कलाकार का अन्तर कितना विशाल है या

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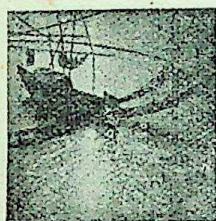
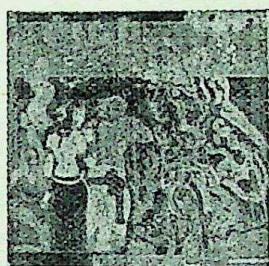
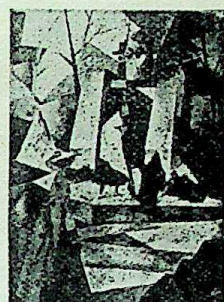
चित्र—'गाँव की ओर' कलाकार—स्वे तोस्लाफ रोरिक

( २ )

चित्र—'एकान्त माझी'
कलाकार—स्वर्गीय
एल० एम० सेन

( १ )

चित्र—'धृतराष्ट्र और गांधारी'
कलाकार—नन्दलाल बसु

( ३ )

चित्र—कुआं
कलाकार—बी० दास गुप्त

( ४ )

चित्र—'आकार रचना'
कलाकार—रामचन्द्र शुक्ल

( ६ )

चित्र—'चकराती दूनिया'
कलाकार—रामचन्द्र शुक्ल

( ५ )

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कैसा है, इसलिये अन्तर पूर्णतया रहस्यमय हो यह भी कहना उचित नहीं क्यों कि कला, साहित्य तथा संगीत इत्यादि कितनी ही कलायें हमारे सन्मुख हैं और आदिकाल से कलाकार अपने अन्तः को व्यक्त करता आ रहा है, और उसकी कृतियां हमारे सन्मुख हैं, फिर हम कैसे कह सकते हैं कि अन्तर रहस्यमय है।

कलाकार आत्म-अभिव्यक्ति के हेतु कला के कार्य में संलग्न होता है। इसलिये यह प्रश्न कि कलाकार कैसी रचना में संलग्न हो, उठता ही नहीं। फिर भी आज के विक्षिप्त सामाजिक ढाँचे में अक्सर यह प्रश्न आलोचकों द्वारा या सामाजिक नेताओं द्वारा उठाया जाता है और वह मनमाने ढंग से कलाकार को आदेश देते हैं कि वह अमुक प्रकार के चित्र बनायें या न बनायें। इस प्रकार के दबाव में सच्ची कला कभी भी नहीं पनप सकती। कला की साधना एक प्रकार की पूजा है और जिस प्रकार हम आज यह नहीं कह सकते कि पूजा करने का यही एक तरीका है या लक्ष्य है, उसी प्रकार कलाकार को भी हम उसके पूजा करने के तरीके से वंचित नहीं कर सकते हैं। कम से कम धर्मनिरपेक्ष राज्य में तो इसकी पूर्ण सुविधा तथा प्रोत्साहन होना ही चाहिए। यह बात भी सही है कि सभी का न तो अन्तः ही इतना विशाल होता है न उसकी कृति ही, पर यह भी सही है कि अपने अपने पैमाने के अनुसार ही मनुष्य काम कर सकता है। उसमें किसी को हतोत्साह करने की आवश्यकता नहीं और यह भी सही है कि समाज जिस रचना में अधिक विशालता देखेगा उसे अधिक समीप रक्खेगा, उसकी अधिक चर्चा करेगा पर आलोचना की कहीं भी गुंजाइश नहीं है। समाज का केवल इतना ही कर्तव्य है कि वह कलाकारों को प्रोत्साहित करे ताकि वह अपनी अभिव्यक्ति में पूर्णतया सफल होने का प्रयास करता रहे।

हमने आरम्भ में ही इस पर विचार किया है कि कलाकार किस प्रकार के चित्र बना सकता है और क्रमानुसार वे हैं—

१—आंखों देखी वस्तुओं का चित्रण
२—चीज़ों को अपने मन के अनुसार सजाकर चित्रण करें
३—चीजों को अपनी इच्छानुसार सुधार कर चित्रित करें
४—चीजों को अपनी कल्पना से कुछ और जोड़कर चित्रित करें
५—आंखों देखी चीजों को न चित्रित कर केवल कल्पना की वस्तुओं का चित्रण करें
६—बिना सोचे विचारे अनायास तूलिका को कागज पर चलने दें
७—किसी कथा, कविता या साहित्य के आधार पर रचना करें।

आत्म अभिव्यक्ति की दृष्टि से इनमें से कौन अधिक श्रेयस्कर है विचारणीय है।

## आँखों देखी वस्तु चित्रण

यह रचना प्रणाली सब से सरल है। इस में सूझ बूझ या कल्पना की कोई आवश्यकता नहीं है। जो वस्तु अपने को सुन्दर लगे उसे ही रंगों के माध्यम से कागज पर उतार देना है, जहाँ तक हो सके बिलकुल वैसा जैसा दिखलाई पड़ता है। इस प्रणाली में आत्म-अभिव्यक्ति की कहाँ तक गुंजाइश है, प्रत्यक्ष है, पर यह प्रणाली काफी प्रचलित हुई और कला में रुचि लेने के प्रचार की दृष्टि से महत्वपूर्ण है, पर आत्म-अभिव्यक्ति इस में उतना प्रधान नहीं

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है। यह भी नहीं कहा जा सकता कि आत्म-अभिव्यक्ति इस में बिलकुल नहीं होती, क्योंकि ऐसी प्रणाली में रुचि के आधार पर ही हम प्राकृतिक वस्तुओं का चित्रण करने को उद्यत होते हैं और रुचि का दिग्दर्शन कुछ हद तक अन्तर ही करता है। इसलिये आत्मा की अभिव्यक्ति एक माने में इस से भी होती है, पर सीमित, क्योंकि जो वस्तु दिखाई पड़ती है उसी में से चुन चुन कर हम चित्र रचना करते हैं और अक्सर हमारा क्षेत्र संकुचित रह जाता है। हम बार बार एक ही प्रकार के दृश्यों को दुहराने लग जाते हैं। अक्सर तो यही होता है कि जो भी चीज सामने पड़ जाती है उसी का चित्र हम उतार देते हैं। दूसरी बात यह कि जब प्राकृतिक दृश्य ही हमारे सामने प्रत्यक्ष है तो उसका चित्र बनाने की क्या आवश्यकता। उसे केवल देखकर ही हम अपने अन्तर को उस से भर सकते हैं, या उस का प्रत्यक्ष अनुभव कर सकते हैं। तीसरे यह कि यदि किसी कारण उस दृश्य को अंकित ही करना हो तो कैमरा उस के लिये काफी है।

## चीजों को सज़ाकर चित्रित करना

यह प्रणाली आत्म-अभिव्यक्ति में कुछ अधिक सहायक है। इसमें कलाकार अपनी रुचि, संस्कार तथा श्रद्धा के अनुसार प्राकृतिक अस्तुओं में कुछ हेर फेर उत्पन्न कर अपनी आत्मा का परिचय देता है, अर्थात वह अपनी परिमार्जित रुचि की अभिव्यक्ति करता है, जिस से उस के व्यक्तित्व की झलक कुछ और अधिक निखरती है। पर यह मान लेना कि हमारे अन्तर की इतनी ही विशालता है या यही उस की सीमा है कुछ उचित नहीं मालुम पड़ता और यही कारण है कि इस से भी कलाकार सन्तुष्ट न हुआ और उसने प्राकृतिक स्वरूपों को अपने आदर्श तथा विचार के आधार पर सुधार कर चित्रित करना आरम्भ किया ताकि उसकी आत्मअभिव्यक्ति कुछ और प्रशस्त हो।

## चीजों में सुधार करना

इस प्रणाली में कलाकार का मस्तिष्क मन तथा कल्पना कुछ अधिक खुल कर काम करती हैं। कलाकार अपना लक्ष्य निश्चित करता है, आदर्श बनाता है और उसी की अभिव्यक्ति के हेतु अपनी रचना प्रणाली निश्चित करता है। वह वस्तुओं के स्वाभाविक रूपों से सन्तुष्ट नहीं होता, उनको अपने आदर्श के सांचे में ढालकर तब चित्रित करता है। ऐसे चित्रों में जब वह इन आदर्श रूपों को अंकित करने में सफल होता है तो उसे आनन्दानुभूति होती है। इस प्रकार वह चीजों का एक परिमार्जित रूप चित्र में उपस्थित करने में अपने व्यक्तित्व की अभिव्यक्ति करता है। यह आदर्श चित्रकार का अपना आदर्श होता है, और यह आवश्यक नहीं, कि अन्य व्यक्ति भी इसे अपना आदर्श माने, और यही कारण है कि ऐसे चित्र सार्वभौमिकता से समृद्ध नहीं हो पाते फिर भी सीमित रह जाते हैं। अक्सर इस प्रकार के कलाकारों की कड़ी आलोचना होती है और समयान्तर में ऐसे चित्रों का मूल्य घट जाता है नये आदर्शों की उत्पत्ति होती है।

## कल्पना से जोड़ कर चित्रण

इस प्रणाली में कलाकर स्वाभाविक रूपों को कल्पना से परिवर्तित करके ही नहीं बनाता, बल्कि पूर्णतया काल्पनिक नये स्वरूपों को भी चित्र में स्थान देता है। ऐसे चित्रों



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में कुछ वस्तुयें तो जानी सुनी पहिचानी सी लगती है, कुछ विलकुल नवीन, अनजानी, अनुसूनी सी। जानी सुनी देखी वस्तुओं के आधार पर कलाकार नवीन स्वरूपों की सृष्टि करके अपनी आत्म अभिव्यक्ति करता है। यहां कलाकार का प्रयास होता है, कि वह प्रकृति के अध्ययन पर आधारित नवीन स्वरूपों को गढ़ता चले। ऐसा करने पर वह अपने को प्राकृतिक आधारों पर चलता पाता है और यह अभ्यास उसे प्रकृति के बराबरी में चलने का अवसर देता है : कलाकार प्राकृतिक वस्तुओं को केवल वाह्य रूप में देखता ही नहीं बल्कि उसकी शक्ति को पहिचानने का प्रयत्न करता है, और उसी आधार पर अपने चित्र में शक्ति की अभिव्यक्ति करता है, और जो अन्तर का विशेष गुण है।

## काल्पनिक चित्रांकन

यहां पर कलाकर शुद्ध रूप से अन्तर में जीवित शक्ति को मूर्तवत करने का प्रयत्न करता है। वाह्य प्राकृतिक वस्तुओं में भी इसी शक्ति को वह देखता है, पर उसे आनन्द तब होता है, जब वह अपने अन्तः की शक्ति को उसका अपना रूप प्रदान करने में सफल होता है। कलाकार अपने को प्रकृति का ही एक माध्यम मानकर स्वयं सृष्टिकार बन जाता है। प्रकृति और उसकी रचना में तनिक भी अन्तर नहीं रह जाता। प्रकृति के मूलभूत आधारों पर पूर्णतः चल कर वह प्रकृति के रचना का स्वयं एक माध्यम बन जाता है और अपार शक्ति का अनुभव करता है, उसका प्रत्यक्ष रूप अपने चित्रों में देखता है। इस प्रकार उसका चित्र पूर्णतया उसके अन्तः का प्रतिबिम्व बन जाता है और वह आनन्द मय हो उठता है।

## अनायास तूलिका को चलने देना

काल्पनिक चित्रांकन में फिर भी कलाकार चेतन रूप में कला-सृष्टि करता है और उसके 'अन्तर' तथा बाहर में कुछ भेद बना रहता है, क्योंकि उसका चित्र कल्पना का सहारा खोजता है किन्तु सत्य तथा कल्पना को एक नहीं कहा जा सकता। जब कलाकार अपनी तूलिका को अनायास कागज पर बहने देता है तो उसके अन्तर और चित्र में बिलकुल एक सी गतिमयता आती है और इतनी साधना से वह कार्य करता है, कि जरा सा भी विकार नहीं आने देता। आत्मा एक होकर, उसके मन तथा चित्र दोनों से होकर एक प्रकार से गतिमान हो उठता है। यह विधि साधारण कोटि के कलाकारों के लिए बिलकुल नहीं है। इसका प्रयोग वही कर सकता है, जिसने तन्मयता पर सिद्धि पाली हो और जिसकी तूलिका चलाने पर ही न चलती हो, बल्कि अपने आप गतिमान हो उठती हो। आत्म अभिव्यक्ति यदि पूर्ण-रूपेण किसी प्रकार कला में हो सकती है तो इसी प्रकार अन्यथा वाह्य उपकरणों में फंसने पर तो बात कुछ और ही हो जाती है।

कथा या अन्य साहित्य के आधार पर रचना करना बिलकुल वैसा ही है जैसा आंखों देखी वस्तुओं का चित्रण या कहिये उससे भी सरल जिसमें अपनी आंख का भी प्रयोग नहीं होता।

संक्षेप में उपरोक्त बातें कलाकारों के लिये विचारणीय हैं और काफी दूर तक सहायक हो सकती है हमें, अपना पथ ढूढ निकालने में।

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# कपिलवस्तु की खोज पर

हर्षवर्धन नैथानी (रानीखेत)

सन् १८७४–७५ में जनरल कनिघंम ने श्री कारलाइल को कपिलवस्तु का पता चलाने के लिये बस्ती जिले में इस नगर की खोज का आदेश दिया था। उनकी उस समय की राय के अनुसार वस्तीनगर से करीब छः मील दक्षिण में चन्दो ताल के किनारे पाए जाने वाले प्राचीन ध्वंसावशेष इस विषय पर विशेष महत्व रखते थे। श्री कारलाइल ने बस्ती जिले में आकर जो पूछ ताछ की तथा और सब बातों का पता चलाया तो उन्हें चन्दो ताल के किनारे पाए जाने वाले (नगर खास) के ध्वंसावशेषों को कपिलवस्तु के शेष चिन्ह नहीं माना। उन्होंने इस विषय पर जो खोज की उसके आधार पर चन्दो ताल से करीब पंद्रह मील उत्तर-पश्चिम भुइला ताल के किनारे भुइला डीह नाम से पुकारे जाने वाले खण्डहरों को ही कपिलवस्तु के अवशेष साबित करने का घोर तथा विद्वत्तापूर्ण प्रयत्न किया। आश्चर्य है कि भुइला डीह में कारलाइल महोदय को फाहियान तथा ह्वानच्वांग द्वारा वर्णित कपिलवस्तु के प्रत्येक चिह्न ही नहीं वरन् भगवान बुद्ध की माता माया देवी का शयनागार भी मिल गया। गलत रास्ते पर पड़ जाने तथा मस्तिष्क का किसी ओर अत्यधिक झुकाव हो जाने के कारण विद्वत्ता कितना बड़ा धोखा खा सकती है इसका ऐसा ज्वलंत उदाहरण और शायद ही कहीं मिलेगा। इन कारलाइल महोदय ने भुइला को तो कपिलवस्तु बतलाया ही, उसके निकट अपनी कल्पना द्वारा और भी कितने ही ऐसे प्राचीन स्थानों को ढूंढ निकालने की घोषणा की जो कि अब बिल्कुल निराधार साबित हो चुके हैं। उन्होंने भुइला के निकट ही और जिन स्थानों की स्थिति को प्रमाणित करने का प्रयत्न किया वे थे:—

(१) कर्कचण्ड बुद्ध का जन्म-स्थान नाभिका।

(२) शोभावती नाम का प्राचीन नगर जो कि कनक मुनि बुद्ध का जन्म स्थान था।

(३) कपिलवस्तु के निकट वह स्थान जहाँ विरुद्धक ने अगणित शाक्यों का वध किया था और जहां चीनी यात्रियों के मतानुसार अनेकों स्तूप वर्तमान थे।

(४) वह स्तूप जहां पर शाक्य-सिंह कभी न मिटने वाली अपनी छाया छोड़ गए थे।

(५) सरकूप नाम का वह जलाशय जिसकी उत्पत्ति पृथ्वी पर सिद्धार्थ के बाण द्वारा हुई थी।

(६) वह सरिता जिसका कि नाम पुराने ग्रंथों में रोहिणी है और जिसके कि तट पर कपिलवस्तु बसा हुआ लिखा है।

(७) लुम्बनी वन वह स्थान जहां कि शाक्य मुनि पैदा हुए थे। ज्ञात हो कि उस स्थान का पता अब पूर्णरूपेण चल चुका है। यह स्थान श्री कारलाइल के बतलाए हुए स्थान से करीब पचासी मील उत्तर में स्थित है और इस बात की साक्षी देने वाला अशोक का एक स्तंभ भी वहां खड़ा है।

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(८) तैल सरित नाम की एक नदी जो लुम्बनी के निकट बहती थी।

(९) कोली अथवा व्याघ्रपुर नाम का वह नगर जो कि श्री करलाइल के मतानुसार भगवान बुद्ध के नाना सुप्रबुद्ध की राजधानी थी।

(१०) न्यग्रोध नाम के एक प्राचीन विहार के अवशेष।

(११) क्षोभवती नाम की वह नगरी जो मेखला के राजा क्षेम की राजधानी थी।

(१२) रामग्राम नाम का वह विख्यात ग्राम जहां कि तथागत के चितावशेषों पर बनाया गया एक बहुत बड़ा स्तूप विद्यमान था।

(१३) मनय नाम का वह स्थान जहां पर महाभितिष्क्रमण के अवसर पर सिद्धार्थ ने अनोमा नाम की सरिता को पार किया था।

वस्तुतः बात ऐसी नहीं है कि जिन स्थानों का कारलाइल महोदय ने वर्णन किया वे कोई स्थान ही न रहे हों। इन सब स्थानों का वर्णन प्राचीन ग्रंथों में कई स्थानों में आया है और कुछ का निरीक्षण तो चीनी यात्री फाहियान और ह्वानच्वांग ने भी किया। मुझे तो श्री कारलाइल एक हठी प्रकृति के मनुष्य मालूम हुए। साथ ही ज्ञात नहीं क्यों उनके हृदय में हिन्दुओं के प्रति घोर वैमनस्य भी था। कपिलवस्तु की खोज के वर्णन में उन्होंने कई स्थानों पर हिन्दुओं तथा उनकी धारणाओं के प्रति ऐसे शब्दों का प्रयोग किया है जो एक विद्वान को कदापि शोभा नहीं देते। ऐसे मनुष्य जिस भी अनर्गल बात का प्रतिपादन न कर दें वह कम ही है। कपिलवस्तु के शाक्यों को इस विलक्षण बुद्धि वाले साहब ने शक ठहराया है और सूर्यवंश को भी खसों की ही एक शाखा। कनिंघम साहब ने (नगर खास) को यदि इस आधार पर कपिलवस्तु अनुमान करने का कुछ प्रयत्न किया कि वहाँ अब भी गौतम वंशीय क्षत्रियों का ही प्रभुत्व तथा बाहुल्य है तो कारलाइल महोदय ने अपने संस्कृत के विलक्षण ज्ञान के आधार पर कपिला, भूइला तथा गौतम रोहिणी को केवल पर्यायवाची शब्द समझ कर ऐसा वितण्डावाद खड़ा किया कि कपिलवस्तु तो क्या प्राचीन ग्रंथों में कहे गए उसके समीप पंद्रह, बीस कोस के अन्तर्गत पाए जाने वाले सब स्थानों को किसी न किसी ऊँचे नीचे स्थान के साथ भिड़ा दिया। ऐसी थी उनकी कल्पना शक्ति और विचित्र सूझ कि उनको प्राचीन काल में कपिलवस्तु से श्रावस्ती जाने वाले राजपथ के चिन्ह भी साफ साफ भुइलाभी के निकट दिखाई पड़ गए।

कपिलवस्तु के वास्तविक स्थान को निश्चय करने के लिए जो दूसरी सहायता मिल सकती है वह है चीनी यात्री फाहियान तथा ह्वानच्वांग का अपने भ्रमण में उसका वर्णन। यद्यपि यह दोनों यात्री अपनी यात्रा में कपिलवस्तु का वर्णन काफी विस्तार पूर्वक करते हैं तथापि या तो प्रतिलिपि की अशुद्धता से अथवा उनके यात्रा-वर्णन के अनुवादकों की गलती से दोनों कपिलवस्तु के विषय में एकमत नहीं दीखते। इन दो यात्रियों के मतभेद की बात तो एक ओर रही स्वयं फाहियान के दो अनुवादक कपिलवस्तु को एक ही स्थान से विपरीत दिशा में ही नहीं अलग अलग दूरी पर स्थित दरसाते हैं। यह सब मतभेद होते हुए भी हमें श्री कनिंघम और कारलाइल महोदय और फाहियान तथा ह्वानच्वांग ने कपिलवस्तु के विषय

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में जो कुछ लिखा उससे उसकी वास्तविक स्थिति का पता चलाने के लिए काफी सामग्री मिलती है। पुराणों में पूर्व कही हुई सब बातों से अधिक महत्व रखते हैं—

(१) लुम्बनी वन जहां कि शाक्य मुनि का जन्म हुआ था और जहां पर उस विषय का उल्लेख करने वाला शिला लेख अशोक के स्तंभ पर अब भी वर्तमान हैं।

(२) कनक मुनि बुद्ध का आश्रम (निगलेखवा) जहां पर अशोक का दूसरा स्तंभ तथा उस पर अंकित लेख वर्तमान हैं।

(३) पिपरह्वा के वे स्तूप जो कि शाक्यों ने तथागत के अवशेषों पर निर्माण किये थे और जिनमें उस समय के अंकित अस्थिपात्रों की प्राप्ति हुई है। रियासत बर्डपुर के स्वामी श्री पी पी ने मुझ से कहा है कि विद्वान् डाक्टर सिलवॉ लेवी ने भी इस विषय पर एक लेख लिखा है। ढूंढने पर भी दुःख है कि मुझे इस लेख की प्राप्ति न हो पाई। पी पी साहब ने जिनकी कि रियासत के अन्दर ही पिपरह्वा है मुझ से यह भी कहा कि डाक्टर लेबो के मतानुसार पिपरह्वा के निकट एक ऐसे नगर के ध्वंसावशेष मिलने चाहिए जिसे कि शाक्यों ने विरुद्धक द्वारा कपिलवस्तु के विनाश के बाद बसाया था। और उन्हें उसके कुछ चिह्न भी मिले हैं। आग्रह करने पर उन्होंने वह स्थान पिपरी बतलाया जो कि बर्डपुर से करीब पांच मील दक्षिण में है। सन् १९४१ ई० में पिपरी में एक जगह से गुप्तकालीन भगवान विष्णु की बहुत ही सुन्दर मूर्ति प्राप्त हुई थी और सुना है कि वह अब लखनऊ अजायब घर में विद्यमान है।

अच्छा तो अब हम कपिलवस्तु के स्थान को निश्चित करने वाली सामग्री का इस प्रकार वर्णन करते हैं।

## कपिलवस्तु का इतिहास

बौद्ध ग्रंथों के अनुसार शाक्य-वंशीय क्षत्रियों ने अयोध्या से चलकर इस नगर से बहुत उत्तर में कपिल मुनि के आश्रम के निकट ही एक नगर बसाया था। इन ग्रंथों का कहना यह है कि सूर्यवंश की इस शाखा को एक नई राजधानी बनाने के लिए चूंकि यह स्थान कपिल मुनि द्वारा प्राप्त हुआ इसलिए उन्होंने इसका नाम भी कपिलवस्तु रक्खा। कथा इस प्रकार है :

यहां पर यह विचार करना आवश्यक है कि बौद्ध ग्रंथों में कहे गये यह कपिल मुनि कौन थे ? क्या कदर्भ मुनि के पुत्र सांख्य के प्रवर्तक भगवान कपिल अथवा कोई दूसरे। मेरे विचार के अनुसार यह ऋषि भगवान कपिल ही थे जिनके कि आश्रम के निकट अथवा जिनके सम्मान के लिए शाक्यों ने अपने प्रमुख नगर का नाम कपिलवस्तु रक्खा। दो बातों से इस विचार की पुष्टि होती है। एक तो यह कि शाक्य मुनि की शिक्षा का आधार करीब करीब कपिल देव का सांख्य ही है। दूसरे श्रीमद्भागवत में भी हमें एक जगह ऐसा ही वर्णन मिलता है कि सप्तसिन्धु का राजा रहुगण भगवान् कपिल से सांख्य का उपदेश

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लेने गया। मार्ग में उसे इक्षुमती नदी के किनारे जिसका ही कि दूसरा नाम अचिरावती अथवा राप्ती है, जडभरत मिले। इतना तो निश्चय है कि शाक्यों का देश तथा राजधानी कपिलवस्तु अचिरावती के उत्तर में तथा हिमालय के दक्षिण में स्थित थे। बौद्ध ग्रंथों में इसके कई प्रमाण मिलते हैं तथा पिपरहवा-स्तूप से प्राप्त अस्थिपात्रों पर अंकित लेख भी इसकी पुष्टि करते हैं। अच्छा तो, अब इतना निश्चय हो गया कि कपिलवस्तु को हमें इक्षुमती अथवा अचिरावती के उत्तर में स्थिति पाना चाहिए।

बौद्ध धर्मग्रंथों में अनेक स्थानों पर पाए गए श्रावस्ती तथा अयोध्या के वर्णन से ज्ञात होता है कि कपिलवस्तु श्रावस्ती के पूर्व में तथा अयोध्या के उत्तर में स्थित थी। इन्हीं ग्रंथों में उसे मल्लों के नगर कुसीनारा के पश्चिम में बतलाया है। वस्तुतः गणतंत्रवादी शाक्य राष्ट्र की सीमा बौद्ध ग्रंथों के अनुसार इस प्रकार विदित होती है—उत्तर हिमालय पर्वत में पाण्डव वंशीय क्षत्रियों का राज्य। एक स्थान में इसी विषय पर एक ऐसी कथा भी आई है कि यद्यपि शाक्य एक पत्नी व्रतधारी ही होते थे तथापि उत्तर के पाण्डव वंशीय क्षत्रियों के साथ युद्ध में विजय प्राप्त करने के उपलक्ष में उन्होंने अपने नेता शुद्धोधन को दो विवाह करने की आज्ञा दे दी थी। पश्चिम तथा दक्षिण में कोशल साम्राज्य और पूर्व में मल्ल तथा कोलिय क्षत्रियों के गणतंत्र राष्ट्र। इन वर्णनों में पाये गये संकेतों द्वारा हम शाक्य राष्ट्र तथा उसके प्रमुख नगर कपिलवस्तु की सीमा को और भी निश्चयात्मक रूप से निर्धारित कर लेते हैं।

कमेटी ने बस्ती जिले के गजेटियर तथा पुराने कागजातों से यह पता चलाने का भी प्रयत्न किया कि वस्ती जिले में जहां कि कपिलवस्तु का होना निर्विवाद है वहां इस नाम से मिलते जुलते कोई और भी स्थान है जहां कि कोई पुराने ध्वंसावशेष मिलें। श्री फूरर के द्वारा ऐसे दो स्थानों का पता चला। एक तो खोपवाडीह जो कि भुइला से करीब साढ़े छः मील पश्चिम में है और जिसे कारलाइल महोदय ने कनक मुनि बुद्ध का जन्मस्थान शोभावती नगर बतलाया था। मैं स्वयं यहां गया। यह स्थान एक प्राचीन ध्वंसावशेष अवश्य है किन्तु किसी बहुत महत्व का नहीं। मुझे यहां शोभावती नगर तथा कनक मुनि के आश्रम का कोई प्रमाण न मिला। दूसरा स्थान कपिलवस्तु से मिलते जुलते नाम का बस्ती जिले में कोषिया है। यह स्थान खलीलाबाद से करीब पांच मील उत्तर में है। मैं, श्री अमरनाथ शुक्ल तथा डाक्टर वासुदेव शरण अग्रवाल ने इसका निरीक्षण किया। यहां हमें बहुत से प्राचीन सिक्के मिट्टी की मूर्तियां और मनके मिले। डाक्टर वासुदेव शरण जी ने यहां पर एक बहुत ही पुराने समय के काँच बनाने की भट्टियों के चिन्ह भी पाये। उन्होंने कच्चे काँच से लेकर सुन्दरतम गुडियों के नमूनों की यहां प्राप्ति की। सिक्कों में जो महत्व पूर्ण सिक्के हमें प्राप्त हुए उनमें से अधिकतर तो अयोध्या के मित्र वंशीय राजाओं के थे। सब से महत्वपूर्ण सिक्का हमें वहां मिला वह था भगवान बुद्ध की मूर्ति से अंकित कुषण सम्राट कनिष्क का। यह सिक्का अन्य सिक्कों के साथ हमने डाक्टर साहब को लखनऊ अजायब घर में रखने के लिए दे दिया। उन्होंने हमको बताया कि यह सिक्का अपनी तरह का लखनऊ अजायब घर में अकेला ही है। कोषिया से जो मिट्टी की शुंग तथा गुप्त कालीन मूर्तियाँ प्राप्त हुई अब ये मूर्तियां बस्ती के कलाभवन में

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रक्खी हैं। कोषिया के पूर्व में एक लम्बा सरोवर है और उसके पश्चिमी तट पर एक ऊंचे स्थान पर भगवान शंकर का मंदिर है। हो सकता है कि शिव का यह मंदिर एक प्राचीन बौद्ध चैत्य रहा हो। कोषिया और वहां से प्राप्त वस्तुएं महत्वपूर्ण तो अवश्य थीं किन्तु कपिलवस्तु से हमें उनका कोई सम्बन्ध न मिला।

तिब्बती भाषा के बौद्ध महाग्रंथ कंजूर के अनुसार कपिलवस्तु कोसल राज्य के अन्तर्गत स्थित था। साथ ही उनका यह भी कहना है कि वह कैलाश के निकट भागीरथी गंगा तथा ऊपरी गंगा याने रोहिणी के तट पर स्थित था। संभव है कैलाश से उनका अभिप्राय हिमालय का हो और रोहिणी अथवा भागीरथी नाम से किसी ऐसी सरिता का संकेत हो जो वहाँ से निकलती हो। यह बात ध्यान रखने के योग्य है कि यह रोहिणी वह सरिता नहीं जो कि आज गण्डक की एक शाखा है।

भागवत पुराण के अनुसार कपिल मुनि का आश्रम भागीरथी के ही तट पर होना चाहिए। उसमें आई हुई कथा के अनुसार भागीरथी गंगा को महाराज भगीरथ लाए ही इसलिए थे कि वह उनके पूर्वजों की राख को जो कि कपिल मुनि के आश्रम के निकट पड़ी थी अपने जल द्वारा पवित्र कर दें।

फाहियान के यात्रा-वर्णन के अनुसार वह श्रावस्ती से बारह योजन दक्षिण दिशा में चल कर नाविका नगर में पहुंचा। नाविका नगर कर्क चण्ड बुद्ध का जन्म स्थान था। नाविका से एक योजन दक्षिण चलने पर वह उस नगर में आया जहां कनक मुनि बुद्ध ने जन्म लिया था। एक बौद्ध जनश्रुति के अनुसार कर्कचण्ड बुद्ध ने क्षोमवती नगर में जन्म लिय। तथा कनक मुनि ने शोभावती में। कनकमुनि के आश्रम से एक योजन पूर्व चलने पर फाहियान कपिलवस्तु पहुँचा था।

भारत के प्राचीन चीनी नक्शे में तथा जापानी इनसाइक्लोपिडिया के अनुसार कपिलवस्तु काशी तथा अयोध्या के उत्तर में बतलाई गई है।

हडसन साहब ने अपने एक लेख में कहा है कि कपिलवस्तु को गंगा सागर के निकट स्थित होना चाहिए।

राजावली के अनुसार कपिलवस्तु एक ऐसी सरिता के तट पर स्थित थी जिसमें कि व्यापारी बड़े अच्छी तरह से आ जा सकते थे।

इन विवरणों में जो कुछ भी मतभेद हो लुम्बनी तथा कनकमुनि के आश्रम निगलेहबा में पाए गए अशोक स्तम्भों पर अंकित लेखों द्वारा कपिलवस्तु की स्थिति का पता बहुत कुछ चल जाता है। भगवान बुद्ध की जन्म कथा के अनुसार उनका जन्म लुम्बनी वन में होने का कारण यह था कि उनकी माता उस समय अपनी ससुराल कपिलवस्तु से चल कर अपने पिता के नगर देवदह को जा रही थीं। रास्ते में ही उन्हें प्रसव पीड़ा विदित हुई और भगवान का जन्म लुम्बनी में हो गया। इस कथा के अनुसार भगवान के स्थान लुम्बनी से कपिलवस्तु की दूरी करीब बीस-पच्चीस मील होनी चाहिए क्योंकि डोला सुबह कपिलवस्तु

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से चल कर शाम को लुम्बनी पहुंचा था। साथ ही यदि चीनी यात्रियों के वर्णन में यदि केवल दिशा की ही भूल है तो कपिलवस्तु कनकमुनि के आश्रम से सात मील पश्चिम में होना चाहिए।

लेखक श्री अमरनाथ तथा श्री शिवहर जी के साथ कपिलमुनि के आश्रम निगलेहवा गया। इस स्थान पर अशोक का एक स्तम्भ आधा स्थिर तथा आधा टूटकर पड़ा है। कपिलमुनि के आश्रम का नाम निगलेहवा कैसे पड़ा इसकी भी बड़ी रोचक कथा है। इस स्थान के निकट ग्रामवासियों की धारणा के अनुसार सम्राट अशोक का टूटा स्तम्भ पाण्डव भीम की वहां छोड़ी हुई वह निगाली है जिससे वे हुक्का पिया करते थे। इस प्रकार भीम की इस निगाली से निगलेहवा नाम की उत्पत्ति हुई। इतना भूल गए हैं हम अपने इतिहास को।

कनक मुनि आश्रम से करीब दो मील दक्षिण पूर्व में लेखक को एक विशाल प्राचीन नगर के ध्वंसावशेष मिले। यद्यपि वहां न तो कोई विशेष खुदाई ही की जा सकी और न कुछ अधिक जाँच पूंछ ही किन्तु उस नगर की लम्बाई चौड़ाई को देख कर तथा वहां पाई जाने वाली बड़ी ईंटों की नाप द्वारा लेखक का अनुमान है कि यही शोभावती नगर था।

कनक मुनि के आश्रम से करीब सात मील पश्चिम उत्तर में भी लेखक को एक बहुत बड़े प्राचीन नगर के अवशेष मिले। वहां हमें पत्थर की दो टूटी मूर्तियाँ प्राप्त हुईं जो कि इस समय बस्ती के कलाभवन में सुरक्षित हैं। वहां इस स्थान पर ही तीन सिक्कों की भी प्राप्ति हुई जिनमें से एक तो अयोध्या के मित्रवंशीय राजाओं का था और दो पाञ्चालों के।

लेखक तथा उसके सहयोगियों ने तिलौरा कोटका, जो कि तालिहवा से ढाई मील उत्तर में स्थित है और कतिपय विद्वानों द्वारा कपिलवस्तु का अवशेष माना जाता है, काफी निरीक्षण किया। इधर उधर बहुत कुछ घूमने पर भी कोई ऐसा विशेष प्रमाण न मिला जिसके द्वारा उसे निर्विवाद कपिलवस्तु कह दिया जाता। आज तिलौरा कोट के ऊपर घनघोर जंगल उग आया है इस कारण हर बात की जांच करना और भी कठिन सिद्ध हुआ। लेखक इतना अवश्य कह सकता है कि यद्यपि तिलौरा एक बहुत ही प्राचीन स्थान है तथापि वह निर्विवाद कपिलवस्तु नहीं। इस कोट के बीच में एक स्थान पर वहीं की ईंटों से एक छोटा सा मंदिर बनाया गया है और वह भी अब बहुत ही जीर्ण शीर्ण अवस्था में है। इसे ही कुछ लोग वह स्थान मानते हैं जहां सिद्धार्थ का भवन था।

ऊपर लिखे स्थानों का वर्णन तो संभवतया कुछ अन्य विद्वानों ने भी किया है किन्तु लेखक तथा उसके सहयोगियों को जिस नवीन स्थान का पता चला और जिसे वे कपिलवस्तु का अवशेष होने की अधिक संभावना समझते हैं वह है चतुरादेवी कोट के नाम से कहे जाने वाला एक प्राचीन नगर का ध्वंसावशेष। यहां पहुँचने के लिए हमको तिलौरा से डेढ़ मील चल कर वाण गंगा को पार कर एक घने जंगल में जाना पड़ता है। लेखक

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तथा उसके सहयोगियों को वहां अनेकों टूटी फूटी मूर्तियां पड़ीं मिलीं। एक मूर्ति बड़ी मुश्किल से हमलोग उठा लाए। वह बस्ती के कलाभवन में विद्यमान है। इस मूर्ति में एक स्त्री एक बालक को अपनी गोद में लिए है और कोई महात्मा उस शिशु का चरण-स्पर्श कर रहा है। संभव है, इस मूर्ति में बालक सिद्धार्थ तथा उनकी विमाता प्रजापति गौतमी को किसी मुनि के साथ अंकित किया गया हो।

बौद्ध अनुश्रुति के अनुसार शाक्यों के एक पड़ोसी कोलिय क्षत्रिय थे। एक कथा में यह भी कहा गया है कि कोलिय और शाक्यों के राज्यों को रोहिणी नदी विभाजित करती थी और इस सरिता के जल से अपने खेतों को सींचने के कारण अक्सर उनमें झगड़ा भी हो पड़ता था। हम लोगों के विचार के अनुसार यह भी संभव है कि तिलौराकोट कोलियों का कोई नगर रहा हो तथा चतुरादेवीकोट शाक्यों की कपिलवस्तु। साथ ही यह भी असंभव नहीं कि बाण गंगा ही वह भागीरथी अथवा रोहिणी हो जिसके कि तट पर कपिलवस्तु स्थित थी। तरादेवी कोट के निकट खेतों की सिचाई आज भी अक्सर बाणगंगा के जल से ही होती है। लेखक को उन खेतों में काम करने वाले किसानों द्वारा कुछ प्राचीन मिट्टी के खिलौने तथा मूर्तियाँ भी प्राप्त हुईं।

दुःख है कि लेखक को न तो उस प्रान्त में घूमन का अधिक समय ही मिल पाया न ऐसे महत्वपूर्ण विषय के योग्य सुविधाएं ही; तथापि जो कुछ सोसायटी द्वारा आज्ञा उसकी कमेटी को मिली उसे उसने पूर्ण करने का प्रयत्न किया। इस विषय पर लेखक का निश्चयात्मक इतना ही कहना है कि अधिकतर विद्वानों की यह धारणा है कि तिलौरा ही कपिलवस्तु है इसे काफी संदेह से देखना चाहिए तथा इस विषय में चतुरादेवी कोट का भी निरीक्षण और अध्ययन परमावश्यक है।

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# DATE OF KHĀRAVELA

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Of all questions concerning Indian history, dates are the most puzzling. Rarely are they recorded in literature, and tradition too is faulty at almost every step. As a general rule, it is necessary, therefore, to receive deductions on the subject with some reservation. For, what appears most satisfactorily established by one set of data, has been entirely upset by another evidence or interpretation.

The date of Khāravela has been a subject of controversy for long. We know of Emperor Khāravela from the famous Hāthigumphā Inscription incised in the ceiling of a natural cavern on the Udayagiri, the ancient *Kumārīgiri*, in Orissa. The inscription gives the chief events of the Emperior's life year by year. Here he is called '*Adhipati*', while his chief Queen's (*Agramahishi's*) record, engraved in the Svargapuri cave, styles him '*Chakravartī*'. But neither of the records says even a single word about Khāravela's ancestors or parentage, which might have helped us in fixing his position in the chronological scheme of ancient Indian history. Nor is there mentioned directly an era or date by which we can determine the exact years of Khāravela. We have, therefore, to depend upon certain internal and circumstantial evidences in order to determine his date.

Of the earlier scholars, Pt. Bhagwanlal Indraji was the first, who believed that the inscription was incised in the thirteenth year of Khāravela's reign, which corresponded to the 165th of the Maurya era, counted from the date of Aśoka's *Kaliṅga-vijaya* in B.C. 255.[1] He, thus, placed Khāravela's accession in B.C. 103. Dr. J. F. Fleet,[2] however, denied the occurrence of a date in the Maurya era ; and was followed by Prof. H. Luders[3] who fixed the accession in B.C. 224, taking the term '*ti-vasa-sata*' in 1.6 as 103 years since Nandarāja, counted from B.C. 322, the date of the last Nanda ruler. But the theory of a date in the Maurya era was again revived by Dr. S. Konow,[4] and carried forward by Dr. K. P. Jayaswal

[1] Actes du Sixieme Congres International des Orientalists, Pt. iii, Sec. II. p. 152-177.

[2] Journal of the Royal Asiatic Society, 1910. p. 242f. & 824.

[3] Epigraphica Indica. Vol. X. No. 1345.

[4] Acta Orientalia. No. 1, 1923, p. 12f.

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and Prof. R. D. Banerji.[1] Later on, however, on a close scrutiny of the record,[2] they also changed their views, now denying the existence of a date in the Maurya year. Prof. R. D. Banerji[3] has given a sequence of events of Khāravela's life, placing him in the first half of the second Century B.C., following K. P. Jayaswal's synchronism of Khāravela with Demetrius, the Indo-Bactrian king, and (Bṛihaspatimitra or) Pushyamitra, the first Śuṅga ruler of Magadha.

In this way, we find that scholars were divided into two different schools—one in favour of occurrence of a Maurya date in the inscription, and the other denying it ; and both the schools were followed by numerous scholars. Recent readings and repeated examinations of the record have finally decided in favour of the latter school viz., the absence of a date in the Maurya era. What the supporters of the former school read in 1.16 as '*Muriyakāla*' or Maurya era, has been read by the others as *Mukhiyakāla*, meaning 'the principal art',[4] and thus changed the very sense of the phrase.

But a date in the second Century B.C. could also not be finally accepted, and scholars like Dr. H. C. Raychaudhari,[5] Dr. D. C. Sircar,[6] followed by Dr. B. M. Barua,[7] Prof. N. N. Ghosh[8] and others, have put forward varied arguments suggesting a date as late as the closing years of the first Century B.C. Hence two separate groups of scholars have again cropped up—one who assign an early date to Khāravela, and the other a late one. But arguments in favour or against either of the groups are not conclusive.

### Internal Evidences

Looking to internal evidences, we come across certain contemporary rulers mentioned in the inscription, and if we could decide upon their dates, our problem might be solved.

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[1] Journal of the Bihar and Orissa Research Society, Vol. III, 1917, Part IV, p. 425-485.

[2] Epi. Ind. Vol. XX, p. 83f.

[3] History of Orissa, 1929, Vol. I, p. 91-92.

[4] D. C. Sircar, Select inscriptions, Vol, 1. 1942. No. 91. p. 206f.

[5] Political History of Ancient India, Calcutta, 1950, p. 374f.

[6] Select Inss, Ibid ; & Imperial Unity, Bombay 1951, p. 215f.

[7] Old Brahmi Inseriptions in the Udayagiri-Khaṇḍagiri Caves, Calcutta, 1929, p. 283.

[8] Early History of India, Allahabad, 1948, p. 189-194.

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*1. Sātkarṇi*

In his second year, Khāravela, sent his forces towards the west[1] disregarding sātakarṇi, who is none else than a ruler of the Andhra-Sātavāhana House. Now, among the early Āndhra rulers, we know of a certain Sātakarṇi, the husband of Nāyinikā, from the Nanaghat record, and he has been identified with the third ruler of the Puranic lists.

The name of the Āndhra nation is extremely ancient, being mentioned in the Aitreya Brāhmaṇa, represented as a Dasyu race living on the fringes of the Aryan settlements and descended from Viśvāmitra.[2] At a later date, they find a mention in the Aśokan edicts,[3] and were reckoned among the tribes and nations resident in or adjoining the outer limits of the Maurya empire, and perhaps subject to the Imperial command, although enjoying a considerable degree of autonomy under their own *rājā*. Secondly, believing the Pūranic evidence of thirty kings with a reign of 460 years and also that the Āndhra power came to an end in about A.D. 225, we arrive at (460—225=) B.C. 235 or nearabout as the date of Simuka, the first Āndhra ruler. We may, hence, fix [235—(23+18)]=B.C. 190-172 approx. as the date of Sātakarṇi, the first.

But it has been argued against this date that, firstly, the Purāṇas are not unanimous about the number of kings and the total duration of their reign. The *Matsya* talks about 19 kings, but gives 30 names; whereas in other MS. the number of rulers differs from 28 to 21. The *Vāyu*, on the other hand, gives the total number of rulers as 30, but quotes only 17 to 19 names. Same is the case about the duration of their sovereignty. It differs widely as 460, 412, 272½ and so on. In the opinion of Sir R. G. Bhandarkar,[4] the longer list includes the names of princes also, who never came to the throne, or might have held provinces. It has been suggested by Dr. Raychaudhari[5] that if the main line of Sātavāhana kings consisted only of 19 kings, and if the duration of their rule be approximately three Centuries, there is no difficulty in according the Puranic statement that

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[1] Line 4. दुतिये च वसे अचितयिता सातकंनि पछिम-दिसं हय-गज-नर-रध-बहुलं दंडं पढापयति ।

[2] Qtd. Dr. D. R. Bhandarkar, Indian Antiquary, ALVII, 1916, p. 70.

[3] Rock Edict No. XIII. B. C. 256.

[4] Qtd. Raychaudhari, P. H. A. I. P. 407.

[5] P. H. A. I., p. 403f.

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Simuka flourished in the time of later Kāṇvas, that is, the first Century B.C., and the dynasty ceased to rule in the third Century A.D.

Secondly, talking in the same tone, depending upon the Puranic chronology we find that ten rulers of the Śuṅga dynasty, which came to power 137 years after Chandragupta Maurya's accession in B.C. 324, reigned for a period of 112 years. The last Śuṅga ruler, Devabhūti, was overthrown by his *Amātya* Vāsudeva, the founder of the Kāṇva dynasty which lasted for 45 years after four successive reigns. The last of them, Susarmana, was ousted by Simuka, the first of the Sātavāhana house. We, accordingly, arrive at B.C. 30 [B.C. 324—(137+112+45)] as the date of Simuka, in which year he might have ousted the last Kāṇvas and had himself reigned for 23 years. Allowing 18 years (10 years, according to some) for Kṛishṇa, his successor, we arrive at B.C. 12 as the date of Sātakarṇi, and accordingly, Khāravela ascended the throne of Kaliṅga in B.C. 14.

The sequence of different dynasties beginning from the Mauryas upto the Āndhras, as given into the Purāṇas is fixed, as it is invariably found practically in all the Purāṇas. It is true, the reign periods of some of the kings, and consequently, the total reign period of the dynasties, vary to some extent. But they all must be adjusted within the framework of the Puranic sequence of Imperial dynasties. Under the circumstances, the date of Khāravela, who was a contemporary of Sātakarṇi—the third ruler of the Āndhra dynasty, is fairly a problem, approximated if he is placed either in the last quarter of the first Century B.C. or in the first quarter of the first Century A.D.

2. *Bṛihaspatimitra*

We are informed that Khāravela, in the twelvth year of his reign, subdued Bṛihaspatimitra, the ruler of Magadha.[1] Now, we come across

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[1] John Allan, Catalogue of Coins of Ancient India, London, 1936, p. xcviii. "......we can not agree that Bṛihaspatimitra is mentioned in the Hāthigumphā Inscription. The word in question begins *bahu*, the certain elements in it seems to be *bahu* (*s*...) *idita* ; it is very probably not a proper name at all, for the suggested reading of the preceding word as *Māgadha charājānām* is extremely improbable, philologically as well as palaeographically.

[2] Line. 12. मागधं च राज्ञानां वहसतिमितं पादे वंदापयति ।

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the following different kings of this name who flourished within a few centuries this side or that of the Christian era :

(*a*) Bṛihaspatimitra (Bṛihasvātimita) occurring on an inscribed brick at Mora near Mathura, commemorating the erection of a temple by his daughter, Yaśamitā.[1]

(*b*) Bahasatimitta from the Pabhosa inscription, near Allahabad, commemorating the excavation of a cave by his maternal uncle (*Mātula*) Aṣhaḍhasena. The inscription is dated in the tenth year of a king Uḍāka.[2]

(*c*) The Kośāmbi coins suggest two different Bṛihaspatimitras on consideration of their[3] types, and the coins of one of them, probably of the later, are restruck.

(*d*) A coin of Bṛihaspatimitra preserved in the Lucknow Museum which has been assigned to the Pāñchāla series.[4]

(*e*) A legend in the Divyāvadāna speaks of a Bṛihaspati as a Maurya king among the successors of Samprati, the grandson of Aśoka.[5]

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[1] Vogel. J. R. A. S. 1912, Pt. II, I. p. 120.

[2] Epi. Indi. Vol. II, p. 241 and plate.

[3] John Allan, C. C. A. I. p. xcvi (Kośāmbi Coins) — "... closely connected with the preceding in style, types and date are two inscribed coins bearing the names of Sudeva and Bṛihaspatimitra, which can not be later than the first half of the second Century B.C., and might even be as early as the third Century B. C. This Bṛihaspatimitra is a different ruler from the Brihaspatimitra who issued struck coins (nos. 16-25) which are comparatively common. Apart from the striking differences in fabric and type, the epigraphy is quite different and earlier. Compare, for example the forms of *ya*, *sa* and *ta* in the two. The epigraphy of the former is still roughly speaking Aśokan while that of the latter is Śuṅga.

Dr. A. S. Altekar, (J. N. S. I. Vol. IV. 1942. p. 143) has published a coin of Bṛihaspatimitra II with the remarks : "......quite clear that it was king Bṛihaspatimitra whose coins have been restruck". But can we conclude from this that it was Khāravela who restruck the coin after conquering Bṛihaspatimitra, as is belived to be mentioned in the Hāthigumphā inscription ?

[4] John Allan. C. C. A. I. p. cxvii ; and V. A. Smith, Catalogue of Coins in the Indian Museum, Calcutta, Vol. I, Oxford, 1936, p. 185.

[5] p. 433 ; J. B. O. R. S. II. 96 ; III, 480 ; Barua, O. B. I., p. 273.

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(*f*) Bṛihaspatimitra of a neo-Mitra dynasty which came possibly into existence sometime after the Kāṇvas.[1]

Dr. K. P. Jayaswal[2] placed Khāravela's accession in B.C. 182, taking him to be a contemporary of Pushyamitra Śuṅga (B.C. 188-151). The validity of this view is claimed primarily on the soundness of his identification with Bṛihaspatimitra merely on grounds that Bṛihaspati (Jīva) is the regent, Nakshatrādhipa, of the nakshatra or Zodical asterism Pushya, also named Tishya, in the constellation Cancer or the Crab.[3] But this cannot be regarded as final in the absence of more convincing evidence[4] and has been rejected as far-fetched by all scholars.

Efforts have been made to assume the two Bṛihaspatimitras of the Mora and Pabhosa inscriptions to be one and the same individuals on grounds that both the principalities acknowledged the suzerainty of the Suṅgas; and further, that they are also identical with the Bṛihaspatimitra of the coins.[5]

John Allan,[6] objecting to the above, argues in favour of two different princes of the same name, identical with Bṛihaspatimitra I and II of the coins and says—"Comparing the epigraphy of the two incriptions, we see that the Mora inscription is much earlier in date; when we remember that the Mora inscription is put up by his daughter and the Pabhosa by his iuncle-although the difference in date may not have been great-it is still more unlikely that the king referred to should be the same in both. The

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[1] H. C. Raychaudhari, P. H. A. I. p. 401.

[2] J. B. O. R. S. Vol. III, Pt. III-IV, p. 236-245.

[3] Sāṅkhyāyana Gṛiha-Sūtra, I. 26. 6. Qtd. Jayaswal.

[4] Raychaudhari, P. H. A. I. p. 373f. Apart from this, in literature, Bṛihaspati, Pushyadharman, and Pushyamitra occur as names of distinct individuals,, and represents Pataliputra as the residence of the latter, whereas the Magadhan antagonist of Khāravela is probably called *Rājagahanapa* (cf. Luder's reading in Epi. Ind. Vol. X. App. No. 1345. with K. P. Jayaswal; Konow reads राजगहम उपपीड़ापयति though he admists that राजगहनप (म) पीड़ापयति is also possible), and apparently resided in the city of Rājagṛiha.

[5] Vogel, J. R. A. S. 1912, p. 120; K. P. Jayaswal, J. B. O. R. S. 1917, p. 473-480; Rapson, Cambridge History of India, Vol. I. p. 524-26.

[6] C. C. A. I. p. xcvii-viii.

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epigraphy of the Pabhosa inscription agrees very well with that of Bṛihaspatimitra II's coins, and although the doubling of the *ta* before *ra* (*mittra*) is not found on the coins, the two may well be identical especially as Pabhosa may be presumed to be within the territory of a king of Kośāmbi. The inscription is dated in the tenth year of a king Uḍāka,[1] who has been identified by Dr. K. P. Jayaswal[2] with the fifth king of the Śuṅga dynasty, whose name appears in various forms in the Puranic lists[3]-Bhadraka in the Bhāgawat, Ārdraka and Oḍruka in the Vishṇū, Āndhraka in the Vāyū and Aṅtaka in the Matsya Purāṇa. According to the Puranic chronology, the date in question could be B.C. 120 and a date of B.C. 125-100 would suit Bṛihaspatimitra's coins. As to the Mora inscription, there is no palaeographic objection in identifying the Bṛihaspatimitra mentioned there whose daughter married the king of Mathura, with Bṛihaspatimitra I of the coins ........It is quite impossible to identify the Bṛihaspatimitra of the coins with the Suṅga Pushyamitra—quite apart from the improbability of this use of synonyms for the coins cannot be removed from Kośāmbi, the coins of which are a very homogeneous series." The same arguement applied to the Pāñchāla coin.

Coming to the identification of the Bṛihaspati of the Divyāvadāna with that of the inscription, we note that the Divyāvadāna[4] mentions the following geneology after Samprati, the grandson of Aśoka—Sampadi, Bṛihaspati, Vṛishasena, Pushyadharman and Pushyamitra. Dr. Jayaswal[5] has brushed aside any possibility of the identification in the following words:—"He (Bṛihaspatimitra) was identical either with Sālisuka (B.C. 211-10) or his successor Devadharman (B.C. 210-3), as the Divyāvadāna gives two names between him and Pushyamitrā. This Bṛihaspati cannot be identified with the Bṛihaspatimitra of our inscription for two reasons. Mitra is not a member of the name of the Maurya king. Nor would the letters of the inscription warrant one going back to B.C. 203. Further, in that case, the inscription would not be dated in the year of the founder of the family of the vanquished rival."

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[1] This is, according to Allan, the correct reading ; the Jain Commentator Śilāṅka equates Uḍaka with Ārdraka, see Jacobi's Jain Sutras, Pt. II, p. 417.

[2] J. B. O. R. S., 1917, p. 457 & 472-83,

[3] Qtd. Raychaudhari, P. H. A. I. p. 393.

[4] p. 433.

[5] J. B. O. R. S. Vol. III, p. 480.

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Regarding a neo-Mitra dynasty, Dr. Raychaudhari[1] says: "The only rulers of note in the centuries immediately preceding the Christian era, whom we know from epigraphic evidence to have ruled in Magadha and the neighbouring territories, are the so-called 'Mitras.' The prevalence of 'Mitra' rule is also hinted at by references in Jaina literature to Balamitra and Bhānumitra among the successors of Pushyamitra. From a study of epigraphs, Dr. Barua compiled a list of Mitra kings. It includes the names of Bṛihasvātimitra, Indrāgnimitra, Brahmamitra, Bṛihaspatimitra, Dharmamitra and Vishṇumitra. Of these only Indrāgnimitra and Brahmamitra and possibly Bṛihaspatimitra are definitely associated with Magadha in addition to other territories. The rest are connected with Kośāmbi and Mathura. It is not known in what relationship most of these Mitra-kings stood to one another or to the celebrated families of the Śuṅgas and the Kāṇvas'.

Dr. B. M. Barua also holds the same opinion: "We must still hold to Dr. Raychaudhari's theory of a neo-Mitra dynasty reigning in Magadha from the termination of the rule of the Kāṇvas in the middle of the first Century B.C. and regard Indrāgnimitra and Brahmamitra as two immediate predecessors of king Bṛihaspatimitra who was the weaker rival and contemporary of Khāravela." And if this be so, then Khāravela should be assigned a date in the last quarter of the first Century B.C. and not earlier to that.

3. *Yavanarāja Dimita*

In the 8th line of the inscription, there is suposed to be a reference to the Yavanrāja Dimita i.e. Demetrius, who, through the uproar occasioned by the action of Khāravela, retreated towards Mathura.[3]

Dr. K. P. Jayaswal and Prof. R. D. Banerji, after a fresh examination of the inscription in 1919, announced that they had read the word Yavanarāja followed by the proper name Dimata. Jayaswal stated that he found the syllable -ma- clear and ultimately, with great difficulty, read Dimata.[4]

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[1] P. H. A. I. p. 401.

[2] Gaya & Buddha Gaya, Vol. II. 1934. Calcutta, p. 74f.

[3] 1.8. एतिन च कंमपदान-सनोदेन···सेनवाहने विपमुचितुं मधुरं अपयातो यवनराज ड़िमित···

[4] J. B. O. R. S. Vol. XIII, 1927, p. 221 & 228.



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This reading and its interpretation as the Greak king Demetrious[1] were accepted both by R. D. Banerji[2] and Dr. Sten Konow.[3] Konow, however, said of his own reading :—'I can see Yavanāja as read by Mr. Jayaswal and of his Dimata the -ma- is quite legible.' He did not say if he could see the supposed faint traces of the rest the word. It is, therefore, clear that there remained an element of conjecture in the readings.[4]

There is also, as Dr. Tarn apprehends,[5] an element of conjecture in the decipherment of the sentence which states what the Yavanarāja did, as the translations differ considerably. Konow's version[6] was: 'And through the uproar occasioned by the action (i.e. the incidents of Khāravela's invasion of Magadha) the Yavana king Demetrius went off to Mathura in order to relieve his generals who were in trouble.' Jayaswal's version[7] was, 'On account of the report (uproar) occasioned by the acts of valuour (i.e. the capture of a fortress etc) the Greek king Demet (rios) drawing in his army and transport retreated to abandon Mathura.' Then in 1928, Jayaswal put forward a totally different view[8]—What the inscription refers to, he said, is the Greek king (he does not say Demetrius) being beaten off from Patliputra, when he attacked it and retreating to Mathura. He had evidently discarded the abandonment of Mathura and on this theory Khāravela does not come into the business at all.[9]

It appears, then, that all we can get at, taking the most favourable view, is, that a Greek king, who may have been Demetrious, retreated to

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[1] Transcription: *Dattāmitra* (Patañjali & Mahābhārata); *Devamantīya* (Milindapañha); *Dharma-mita* (Yoga Purāṇa); *Demetriya* (on the bilingual tetradrachm); *Timitra* (on the seal from Besnagar. A. S. I. 1914-15, Vol. I. p. 19; II. p. 77).

[2] Ibid.

[3] Acta Orientalia, I, 1923, p. 27.

[4] Dr. W. W. Iarn, Greeks in Bactria and India, 1952, Appendix No. 5. p. 457f.

[5] Ibid. p. 458.

[6] Acta Orientalia, I. 1923, p. 27.

[7] J. B. O. R. S. Vol. xiii, 1927, p. 228.

[8] J. B. O. R. S. Vol. XIV. p. 417.

[9] Tarn Op. Cit. p. 458.

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Mathura. So much is known from other sources. The Yuga Purāṇa[1] records the withdrawal of the Greeks from the mid-Country, while Ptolemy and the coins show that Menander subsequently ruled in Mathura.[2] 'Certainly the reason for this withdrawl given or iplied in the inscription —that the Greeks were frightened away by the invasion of Khāravela, though *ex hypothesi*, he was attacking their enemy Pushyamitra can not be right; it may have pleased Khāravela to thik so'—argues Dr. Tarn.[3]

Dr. Tarn further adds: One further point must be briefly noticed. Konow has put forward the view that if the hāravelas inscription really means Demetrius (note the 'if') then Demetrius was the king of the siezes of Sāketa and Madhyāmika metioned by Patañjali[4] which would mean (among other things) that it was he, and not Menander, who led the Greek advance south-eastward, and he, and not apollodotus, who led the Greek advance southward or Sind Had the relations between Demetrius and his lieutenants ever been worked out, such a theory could never have been put forward; the evidence given in Chanpter IV ( of his Work) is too strong to give it a chance. But quite apart from that, the inscription can have no bearing at all on the Greek invasion.[5]

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[1] Translation of Sec. V & VII, concerning Greeks; (Qtd Tarn, App. IV.)

V) After this, having invaded Sāketa, the Pāñchāla and Mathura. the viciously valiant Yavanas (Greeks) will reach Kusumadhvaja (the town of the flower-standard). Then the thick mud-fortification (embankment) at Patliputra being reached, all the provinces will be in disorder without doubt. Ultimately a great battle will follow with tree (—like) engines.

VII) The *tama*-elders of Dharma-mita will fearlessly devour the people. The Yavanas (Greeks) will command, the kings will disappear. (But ultimately) the Yavanas, intoxicated (the middle country); there will be a very terrible and ferocious war.

[2] Tarn Op. cit. p. 227; 228. f. n. 2; & 245.

[3] Op. cit. p. 458.

[4] Acta Orientalia, I, 1923; Jayaswal has followed him. JBORS, XIV. p. 127.

[5] Even if the reading Dimita be correct, be reference to Demetrius, or to Diyumeta or Diomedes, as suggested by Whitehead (Indo-Greek Coins, p. 36), cannot be taken to be correct, since Diomedes belonged to the House of Eukratides, and hence was confined to the North-western part of India; (Tarn. Op. cit. p. 315; Rapson, C. H. I. p. 556), and therefore, had nothing to do, not only with Patliputra, but even the eastern part of the country to river Jhelum.

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One more point in connection with the Greek advance to Patliputra must be noticed. One need not waste time over the belief of some writers that the Greek kings were condottiere and their conquests were raids, beyond hoping that such writers have clear ideas of what a raid from Rawalpindi upon Patna would mean[1].

4. *Phrase 'Ti-vasa-sata'*

There is a phrase *'ti-vasa-sata'* in line 4 of the inscription.[2] The following rendering have been proposed in regard to that:—

1. He opened the three-yearly alm-house of Nandarāja, as translated by Indraji in the International Oriental Congress Proceedings, Leidon, 1884, part iii, p. 135. He took *sata* as *sattara* which is equivalent to *satra* in Sanskrit, and it means 'almshouse'. But this rendering is not accepted by scholars now.
2. 'He has an acqueduct conducted into the city which had been used for 103 years since king Nanda'. This translation has been proposed by Prof. Luders in Epigraphica Indica, Vol. X, App. No. 1345 p. 161. He took *sata* to be *sata* which means 'hundred'.
3. 'He brings into the capital the canal excavated by king Nanda 300 years before', as proposed by Jayaswal and Baenrji in J.B.O.R.S. Vol. III, 1917, p. 425f.
4. 'He brings into the capital from the road of Tanasuliya the canal excavated in the year 103 of king Nanda', as according to a revised translation by Jayaswal and Banerji, Epi. Ind. Vol. XX, Art. 7. p. 71f.

Now, according to Jayaswal, the year in this passage may be taken as to the Nanda era referred to by Al-Biruni in Tahqiq-i-Hind. Pargiter

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[1] Sri P. L. Gupta, M.A., has suggested to me that the ruler mentioned may have been Wema of the Kadphises group of the Kushanas. He has, however, not put forward any argument in favour of his theory. But were it Wema Kadphises, we shall, in that case, have to place Khāravela in the middle of the first Century A.D. and not earlier to that.

[2] line. 4. पंचमे च दानि वसे नंद-राज ति-वस-सत ओघाटितं तनसुलियवाटा पणाडिं नगरं पवेसयति ।

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places the accession of the first Nanda ruler approxi .in B.C. 402, calculating back from the accession of Chandragupta Maurya, in B.C. 322, by adding 80 years as the duration of the reign period of the nine Nanda Kings. According to this estimate, the canal excavated by the Nanda king in Kalinga would be in (B.C. 402—103=) B.C. 299 ; and accordingly it would be too late to ascribe the public work to any Nanda king, since no Nanda ruler is believed to have ruled till B.C. 299. Even if we take the Puranic account of 100 years as the duration of the nine Nandas (i.e. 88 years for Mahāpadma Nanda and 12 years for his sons). then we reach B.C. 319 as the year of the excavation of the acqueduct, which, too, would not fit in the chronological scheme of ancient Indian rulers (322+100—103=B.C. 319), since Chandragupta Maurya acceded the throne of Magadha earlier to that date.

Prof. R. D. Banerji believes that the canal may have been excavated by the first ruler of the Nanda dynasty, 103 years before the fifth year of Khāravelaś reign ; viz 103+5=108 years before his accession. Agreeing with Jayaswal, he takes the era to be counted from B.C. 458. Hence, the canal, according to him, was excavated in B.C. 355, say at least 33 years before the accession of Chandragupta Maurya. Here the learned Professor appears to have taken the figure 103 to express not the interval between Nandarāja and Khāravela, but a date within the rule of the Nanda dynasty, which may have reckoned from some pre-existing era. But use of any such era in any particular part of the country or epoch is not proved. Khāravela himself, like Aśoka, uses regnal years and not any era.

Dr. Raychaudhary[1] on the other hand suggests that the interpretation of *ti-vasa-sata* accords substantially with the Puranic tradition, regarding the interval between the Nandas and the dynasty to which Sātakarṇi, the contemporary of Khāravela, in his second regnal year, belonged (i.e. 137 years for the Mauryas, 112 years for the Śungas and 45 years for the Kāṇvās) say 294 years. If the expression is taken to mean 103 years, Khāravela's accession must be placed (103—5=) 98 years after Nandarāja. His elevation to the position of *Yuvarāja* took place 9 years before that (i.e. 98—9=89 yrs after the Nandarāja and not later than 324—89=B.C. 235). Khāravela's senior partner in the royal office was on the throne at that time, and he may have had his predecessor or predecessores. But we learn from the

[1] P. H. A. I. p. 229f.

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Aśokan inscriptions that Kalinga was actually governed at that time by Maurya *Kumāra* and not by a *Kaliṅgādhipati* or a *Chakravarti*, under the suzerainty of Aśoka. Therefore, *ti-vasa-sata* may be understood to mean 300 years and not 103 years. Dr. D. C. Sircar[1] also holds that there is no doubt that three hundred years has been used in the well-known Indian way of reckoning by hundreds, illustrated so often in early Indian literature.

Dr. K. P. Jayswal himself had accepted this interpretation, as already mentioned, but identified Nandarāja with Nandivardhana, so that Pushyamitra and Khāravela were placed as contempraried. But Nandivardhana was a Śaiśunāga king and has nothing to do with Kalinga. It was Mahāpadma Nanda who is described in the Purāṇas to have brought 'all under his sole sway' and who 'uprooted all Kshatriyas.' So Nandarāja of our inscription may be identified with Mahāpadma Nanda, who could not have reigned beyond B.C. 334 (accession of Chandragupta Maurya in B.C. 321, plus 12 years as reign period of the 8 sons of Mahāpadma Nanda). Therefore, incident of extending the acqueduct 300 yrs after Nandaraja took place near about 33 B.C. The mention of a round figure of 300 years which is a conventional form of expression, may not be taken too literally. Taking into consideration, Kharavela's contemporaniety with Sātakarṇi as already mentioned, we may fix Khāravela's accession to the throne of Kalinga in about B.C. 25. We may, therefore, draw up a tentative table of approximate chronology with 25 B.C. as the starting point:

| | |
|---|---|
| Birth | 26+16+8=49 B.C. |
| Yuvarāja | 25+8=33 B.C. |
| Rājyabhisheka | =25 B.C. |

But it may be argued against the above date that if we are to understand 300 years by *ti-vasa-sata*, then it would be obligatory upon us to the phrase *terasa-vasa-sata*[2] in line 11 as denoting 1300 years and not 113 years as proposed by K. P. Jayaswal and R. D. Banerji in their translation of the passage: 'He thoroughly breaks up the confederacy of the Tramira (Dramira) countries of 113 (1300) years, which has been a source of danger to (his) country (Janapada)."[3] But a confederacy of rulers as old as 1300 years at the eve of the Christian era may be just unthinkable.

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[1] Imperial Unity, Bombay, 1951, Chap. XIII, p. 216.

[2] L. 11.

जनपद भावनं च तेरस-वस-सत-कतं भिदति त्रमिर-दह (?) संघातं ।

[3] Ep. Indi. Vol. XX, Art. 7, p. 71f.

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## CIRCUMSTANTIAL EVIDENCES

### 1. *Palaeography*

Now, coming to the circumstantial evdiences, we should first examine the palaeography of the Hāthigrmphā inscription, and see whether we are able to fix its date on that basis.

The decided opinion of scholars on palaeography places the Hāthigumphā record probably later than the Nanaghat inscriptions, and certainly later than the Besnagar inscription of Heliodorus.[1] Mr. R. P. Chandra has suggested as many as seven stages in the evolution of the *Brāhmī* letter-forms from the Edicts of Aśoka to the Sanchi Gateway Inscriptions. the sixth being represented by the Hāthigumphā inscription of Khāravela, and the fifth by the Besnagar Garuda Pillar Inscription of Mahāraāja Bhāgawat ; the Nanaghat Inscription of Nāyanikā, the widow of Śātakarṇi ; and the Bharhut East Gateway Inscription of Dhanabhūti, taken in a chronological order.[2]

Prof. Banerji,[3] while disagreeing with the views of Mr. Chanda in regard to certain points, admits, after a detailed examination, that the Nanaghat inscriptions show the use of a very large number of Kshatrapa or early Kushan forms side by side with older ones. According to Prof. E. J. Rapson,[4] the form of the *akshar* '*da*' found in the Nanaghat record resembles that of a coinlegend which is assignable to the first or second Century B.C. Buhler also observes[5] that the characters of the Nanaghat inscriptions belong to a period anterior to about 100 years to that of the edicts of the Gautamiputra Śātakarṇi and his son Pulumāyi. Mr. N. G. Majumdar[6] places the Nanaghat record during the period 100—75 B.C.

The signs and characters like *va, pa, da, cha* etc. in the Nanaghat Cave inscriptions show a decided advance over the Aśokan, or for the matter of that, Śuṅga scripts. They are on way to become triangular. On these

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[1] D. C. Sircar, Select Inscriptions, Vol. 1, p. 206.

[2] Memoirs of the Archaeological Survey of India, Vol. I, p. 10-15 ; and Indian Historical Quarterly, 1929, p. 601f.

[3] Memoirs of the Asiatic Society of Bengal, Vol. XI, No. 3, p. 145.

[4] Catalogue of the Andhra Coins, p. lxxvii.

[5] A. S. W. I., Vol. V, p. 65.

[6] The Monuments of Sanchi, Vol. I, Pt. IV, p. 277.

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grounds, and others, already discussed in regard to Satakarni, the Nanaghat inscriptions are to be placed in the last quarter of the first Century B.C. So the Hāthigumphā inscription, which, as we have seen, is slightly later than or contemporaneous with the Nanaghat inscriptions, cannot be earlier than the first Century B.C. Hence Khāravela cannot be placed in the second Century B.C. in any way.

## 2. *Titles 'Mahārāja and Chakravarti'*

The titles '*Mahārāja*' and '*Chakravarti*' in Khāravela's own and his Chief Queen's inscriptions, respectively, may also point towards a late date of the Hāthigumphā inscription. Undoubtedly, we find the word '*Mahārāja*' meaning 'a great king' frequently referred to in the Brāhmaṇas[1] and the regular *abhisheka* of a *Chakravarti* monarch, otherwise called the *Aindra-mahābhisheka*, has been referred to in the Satapatha and Aitreya Brāhmaṇas,[2] yet there are but a few instances to show that such titles were in use posterior to the Buddhist period, which is generally taken as the beginning of historic period in India. Mahāpadma Nanda has been called '*Sarva-kshatrāntaka*' and '*Ekarāṭa*', which are more qualitative terms than titles. Even Emperor Aśoka, who was master of practically entire India, did not use titles, but remained contented by the use of terms '*Devānam priya*' and *Priyadarsi Rājā*'. But in the case of Khāravela, we may not be far wrong in concluding, that the use of titles was much in line with those of the later Greeks, who sometimes used long and bombastic epithets like 'Basileos Basileon Megaloy—Maharajasarajatirajasa mahatasa'; Basileos Dikaioy Nikepheroy—Maharajasa dhramikasa jayadharasa', and so on and so forth. The dynastic title '*Mahā Meghavāhana*' viz. one whose vehicle is the magnificent elephant i.e. like god Indra", might also indicate towards the same conclusion. Here Khāravela has probably identified himself with gods, and not that 'Beloved of gods' just like Aśoka.

Dr. D. C. Sircar also maintains:[3] 'His (Khāravela's) title *Mahāraja*, which like *Mahārājādhirāja* seems to have been inspired and popularised

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[1] Aitreya, vii, 34. 9; Kaushitaki. v. 5; Śatapatha. i. 6. 4. 21; ii. 5. 4. 9; Brihadrāṇyaka Upanishad. ii. 1. 19; Maitrāyaṇi Upanishad. ii. 1. etc. Qtd. Vedic Index, Vol. II, p. 27.

[2] Qtd. Hindu Polity, Pt. II, p. 27.

[3] Imperial Unity, 1951. p. 215f.

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by the foreign rulers of India, and was first used by the Indo-Greeks in the first half of the second Century B.C. suggests a later date. A king of Kaliṅga, far away from the sphere of influence of foreign rulers, could have assumed it only at a later period'. Hence Khāravela must be assigned a date only late in the first Century B.C.

### 3. *Kāvya Style*

The entire inscription is written in prose, rhythmic prose abounding in alliterations, elegant expressions, and balanced sentences, claused and phrases. In reading the inscriptions which stand in the names of Emperor Khāravela and his Chief-Queen, one cannot but be tempted to make out verses in them. Their diction is metrical prose without revealing the actual process of versification. It appears ornamental.

In the main text of Khāravela's inscription, we find that the effect of rhythm is heightened by a mathematical progression of the volume of sound, and that the main statement commences from the point where the climax is reached. In such a text as this, the verbs are bound to be sparingly used, and a rhyming process is bound to play its part as will be evident from the following :— "Aireṇa mahārājena, mahāmeghavāhanena, cheta-rāja, vasanena, pasatha-subha-lakhanena, chaturanta-rakhana-guṇa-upetena, kalingādhipatinā-siri-khāravelena, pandarasa-vasāni, siri-kaḍāra-sarīravatā-kīḍitā, kumāra-kīḍikā......"

Dr. B. M. Barua[1] opines that the inscription is not the prose style of the Pali Tipiṭaka, nor that of earlier portions of the Jaina Āgamas, nor that of the Vedas, Brāhmaṇas, older Upanishads, Kalpasūtras, Niruktas and Pratisakhya. So far as its prose style goes, it stands out in point of time as a notable landmark in the literary history of India.

Taking the rhythmic prose style of the Hāthigumphā inscription into consideration, we may not be far wrong in concluding that it not only shows an improved but also a very new and advanced style as compared to the simple and blank writings of the Aśokan Edicts, and this notable difference is not that of place but is that of time. We may ascribe a period of two Centuries to this, and place the Khāravela's inscription in the last quarter of the First Century B.C.

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[1] O. B. I. p. 172.



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### 4. *Śisupalagarh Excavations*

The excavations at Śiśupālagarh do not help us much in fixing the date of Khāravela, yet its evidence may not be of mean importance.

The possibility of ruins of Śiśupālagarh (Lit. Śiśupāl fort), representing the site of Kalinga-nagar, has been put forward by Sri B. B. Lal.[1] Though the Hāthigumphā inscription does not say anything about the distance and even direction of the city of Kaliṅga from the Udayagiri-Khaṇḍagiri hills, yet it may be surmised that it could be situated somewhere in the neighbourhood; and in that, claim of Śiśupālagarh may be considered. According to the inscription, Kaliṅga-nagar was provided with fortifications and king Khāravela repaired the gateway and fortification-wall which had been damaged by a storm. Now, no fortified town of comparable date except Śiśupālagarh is known to exist near about the Khaṇḍagiri-Udayagiri hills; secondly, the excavations did reveal a collapse and subsequent repair of the southern gateway-flank of the fortification.[2]

The excavations revealed that the defences (fortification-wall) did not come into being with the first occupation dated between B.C. 300-200.[3] But what particular circumstances led to this construction, cannot be determined in the present state of our knowledge, though the moment must have been a remarkable one in the history of the site.

A cutting across the defences has been divided into four main phases[4]:—

1. In the earliest phase, the defences consisted of a massive clay-rampart over 25 ft. high at this point and 110 ft. wide the base. On the top of the rampart wall occurred a series of roughly circular holes, each about a foot deep and 10 inches wide arranged at regular intervals of 1′10″. They were found packed with laterite gravel and covered with a thin layer of clay. Their exact purpose is indeed difficult to determine without further evidence. This earliest phase of the defences has been dated in the first quarter of the second Century B.C.

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[1] Ancient India Bulletin of the Arch. Sur. of India, Vol. V, Jan. '49, p. 66f.

[2] Ibid.

[3] Ancient India, Op. cit. p. 74.

[4] Ibid, p. 74.

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2. During the second phase, a 4-6 ft. thick layer of laterite gravel was added on to the top of the clay rampart. Such a feature was also noticed at the western gateway and elsewhere in the sections of some of the monsoon-gullies round the periphery. The phase does not appear to have been a long-lived one.

3. The third phase, witnessed a change in the make up of the defences. Two brick walls, 26 ft. apart, and 2′6″ and 3′6″ thick, respectively, were built at the top of the laterite gravel and the space between them was filled up with mud and earth. Towards the interior of the fort and also on the outside can be seen the builder's ramp, 3-4 ft. thick, which also helped to retain the brick walls. In course of time, more material, including brick-bats, was added to these ramps to hold the walls vertical. The phase seems to have come to an end about the middle of the first Century A.D.

4. Phase fourth does not seem to have immediately followed the phase third.

Taking the above into consideration (provided we identify Śiśupalagarh with Kaliṅga-nagar of our Inscription), our immediate conclusion is that Khāravela cannot be ascribed an earlier date, since the defences were constructed during a late period. Hence phase second and third might represent the age of Khāravela. But phase second was a short lived and it is possible that the defences gave way just at the close of this phase or the beginning of the next, so that Khāravela, who was possibly the ruler of the city, repaired them by adding brick-walls and also builder's-ramp to retain them, already referred to in that phase. Khāravela, hence, may be placed as late as the close of the first Century B.C.

5. *Absence of Coins*

The fact that no coins of Khāravela have come down to us so far, needs some cool consideration. We know from the various hoards found that the Sātakarṇis (Sātavāhanas) issued coins. Coins of some Bṛihaspatimitra are also forthcoming, though his identification with the one of Khāravela's inscription is not certain. Though we are not on a safer ground in the identification of the Yavanarāja, yet we can be more or less sure that even if he is a later king to Demetrious, he must have issued coins in his name. In this way, we find that practically all the contemporaries of Khāravela issued coins. But why not Khāravela ?

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Dr. S. L. Katare :[1] suggests. "We know that none of the Maurya rulers issued coins in his name, so also perhaps the Śuṅgas. The only coins, rather the earliest, found circulated in ancient India, are the so-called punch-marked coins. The same were used in the Sunga period. Can we infer from this that the same were continued by Khāravela also ? If so, then I shall place Khāravela nearer to the period of the Mauryas and the Śuṅgas and not very far removed from them".

As a matter of course, we should have no difficulty in accepting Dr. Katare's suggestion. But the possibility of existence of Khāravela's coins cannot be ruled out entirely. There have been no excavations worth the name in that part of the country. Future excavations might yield some evidence. Secondly, surmising that Khāravela also issued punch-marked coins, and hence he may be placed nearer to the Mauryas and the Sungas, may not be acceptable, since, we find that punch-marked coins did not end in the second Century B.C. but continued for a much longer period. Dr. Bhandarkar[2] has equated punchmarked coins with Kārshāpaṇas, so frequently mentioned in ancient Indian literature. And there are references to it traceable in the west India Cave inscriptions of the Sātavahana period. At Besnagar, Dr. Bhandarkar has found punch-marked coins on all early sites containing strata reaching up to the fourth Century A.D.[3] Later on, the Bṛihaspati and Kātyāyana Smṛitis refer to Aṇḍika as another name for Kārshāpana, which can be dated in the seventh Century A.D. An inscription originally found at Bijapura,[4] in Jodhapur state, and dated A.D. 997, while recording the benefactions to a Jaina temple, speaks of a grant of one *Kārsha* for every *ghadā* (earthen pot) at every local oil-mill. The Gaya Stone Inscription of the Pāla king. Govindapāla,[5] dated V.E. 1232 (A.D. 1175) makes a mention of Kārshāpaṇi.

Silver and copper punch-marked coins have been found in the Śiśupālagarh excavations.[6] The silver coin, of the square punch-marked

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[1] I. H. Q., March '52, p. 68f.

[2] The Carmichael Lectures on Ancient Indian Numismatics, Cal. 1921, p. 94-95.

[3] Ibid. p. 185.

[4] Ep. Ind. No. X, p. 24 & 26-27, Qtd. Bhandarkar.

[5] Palas of Bengal, p. 109, Qtd. Bhandarkar.

[6] Described by K. Deva, Ancient India, Vol. V. p. 95-96.

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variety, with a known reverse type[1] and a new combination of obverse symbles, was found in an early level of period II B, dated c. 100 A.D. It has already been much worn out by circulation when it was buried.

The copper puch-marked coins have been divided into two distinct groups. The first group comprised 9 rectangular uninscribed coins, of which 3 came from the earliest coin-bearing strata of this excavation, viz., the upper layer of 'period II A attributable to c. 50-100 A.D. The same number of coins were found in the early levels of period II B, datable to C. 100-125 A.D., while the remaining three were obtained from later deposits. Of a total of nine coins of this group, the five legible ones bear designs coccurring on the copper punch-marked coins from Eran,[2] in the Saugar district. These appear to have been manufactured either at Eran, or under the inspiration of the Eran coinage.

Apart from coins, the most note-worthy finds include two coin-coulds ; one complete disc and the other fragmentary, both of punch-marked coins. They are made of grey-ware pottery and are very much worn out, presumably by repeated casting operations. They have been found in layers attributable to the third Century A.D. (rather too late to be placed in the epoch of Khāravela), but these confirm to the fact that punch-marked coins continued to be minted and were in circulation in Orissa at least as late as the third Century A.D.

Therefore, while supposing that punch-marked coins[3] might have

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[1] J. Allan, Coins of Ancient India, 1936, p. lxi & 28-36, Pl. V. Nos. 1-3, 6-7. Qtd K. Deva.

[2] J. Allan, Op. cit. p. xviii, Nos. 7-22.

[3] As already mentioned, Dr. Altekar has published a counterstruck coin of Bṛihaspatimitra II (J. N. S. I. Vol., IV, 1942, p. 143, Pl. XII. 24) with the following description :—

Obv : In the centre tree within railing, counterstruck with the symbol of a V-topped banner with two-pronged to r. enclosed in a railing of two storeys. To 1. Ujjain symbol below, and a V-topped banner above. To r. a wavy line ; below, the ramnants of the original legend *Bahasatimita* (letters *timita* completely wiped out by the lower portion of the counter-struck symbol). Letters *bahu* are quite clear in the plate and the concluding *sa* is faintly visible.

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been issued by Khāravela, it is not obligatory to place him nearer to the period of the Mauryas and the Śuṅgas simply on that ground. He canvery easily be placed in the closing years of the first Century B.C., as is evident from other sources of information.

*6. Art & Architecture in the Udayagiri-Khandagiri*

In the absence of the undoubted dated in the Hāthigumphā record or in that of Khāravela's Queen, and of his successor in the Manchapuri cave, we should endeavour to determine the age of these monuments from other sources of information.

Sir John Marshall[2] fixing the chronology of the caves mentions : Of the whole series, the oldest is the Hāthigumphā, a natural cavern enlarged by artificial cutting, on which is engraved the Khāravela's inscription. The next cave, fixed in chronological position, is the Mañchapuri. It possesses two storeys, the lower consisting of a pillared verandah with chambers hollowed out at the end. It is in the upper storey of this cave that the inscription of Khāravela's Queen is incised, while in the lower are short records stating that the main and side chambers werethe works respectively of Vakradeva (Vakadepa siri or Kudepa siri) the successor apparently of Khāravela and of prince Vaḍukha.

It may be presumed, therefore, that the upper storey is the earlier of the two. The rail pattern which one adorned the broad band of rock between the two storeys is now all obliterated, but in the ground-floor verandah is a well-preserved frieze which confirms by its style what the inscriptions might otherwise lead us to suppose, namely, that next to the Hāthigumphā, this was the most ancient cave in the two groups. Compared with some of the reliefs of the sculptures in the locality, they are of poor coars workmanship, but in the depth of the relief and plastic treatment of

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Rev : Completely blurred. Metal copper, roughly circular, 6″ in diameter 46.3 grains, die-struck, found at Kosambi.

Here it is Bṛihaspatimitra's coin which has been restruck and that too with a symbol which is some shape or the other is found in the Hāthigumphā inscription. Can we conclude that it was ret-struck by Khāravela ?

[1] C. H. I. Vol. I, p. 638-42.

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the figures, they evince a decided advance on the work of Bhārhut, and unless it be that sculptured, in this part of the country, had undergone an earlier and independent development, it is safe to affirm that they are considerably posterior to the sculptures of Bharhut.

Stella Kramrisch writing on the art in the Udayagiri-Khaṇḍagiri caves says.[1] The style of the Manchapuri cave reliefs puts them right at the beginning of artistic activities in the rock-cut caves of Orissa. Here the figures are animated considerably. This animation, playful and purposeless in the *Gana-figures*, is enhanced into energetic speed in the onrush of the *Gandharva*-figures. The transition from the static squareness of the Maurya figures to linear vitality is marked here as well as in Bharhut. But there the movement is of a hesitating grace, and reverential, wheresas here it is not only variegated in speed and expressions, but is altogether more intense, untouched almost by any scruples of the religious mind. The craftsmanship is medicore. The way in which the movement is enhanced from the kneeling bent right leg of the flying figure to the raised and outstretched left, in order to culminate in the graceful diagonal of the dends of the scarve, is constrasted with the playful hovering of the *Ganas* with their enlarged, rounded and inarticulate limbs. Altogether, the anatomy of the figures is more suppressed even than in Bharhut in favour of an all-round smoothness of limbs. This plasticity of limbs is subservient to an easy flow of movements. It gains in liveliness by addressing itself directly to the spectator, whereas the Bharhut figures, unconcerned about his presence, enacted their parts, intensely absorbed by them and by their own existence ; the figures of superhuman-beings, of men and animals alike, address the spectator in three-quarter profile, so to say, or else they turn their faces in full front-view towards him. Yet inspite of forcefulness and agitation, the work on the Mañchapuri-the earliest in so far artistic activities are concerned—cave with its halting and economical way, as far as spacing and description go, belong to the diapason of Indian sculpture in the second Century B.C. ; whereas the direct emotional appeal, liveliness of gesture, and smoothness of limbs belong to a somewhat later period and are fully developed in the first Century B.C. (c.f. the relief in Mahābodhi and Sāñchi) and destined to become more and more emphasised in the work of other caves.

[1] O. B. I., p. 307f.

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Prof. N. N. Ghosh[1] opines that the Bharhut sculptured gateway bearing an inscription is about a Century later than the time of Pushyamitra Śuṅga i.e. about the first quarter of the first Century B.C. And hence Khāravela could not have flourished in the second Century B.C.

*Conclusion*

Considering all the evidences enumerated above, we have to conclude that Khāravela did not flourish in the second Century B.C., but perhaps he is to be assigned to the first Century B.C., preferably the last quarter of it.

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[1] I. H. C. Proceedings, 1943, p. 109-116 ; and B. C. Law Comm. Volume, Vol. I, p. 210-218.

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# साहित्य में समस्या

## शंकरदेव अवतरे

यह कहना कठिन है कि मनुष्य के पीछे समस्याओं ने कब से ऊधम उठा रक्खा है। सम्भवतः मनुष्य का इतिहास जितना पुराना है समस्याओं का इतिहास भी उतना ही पुराना है और मनुष्य जितना नया है समस्यायें भी उतनी ही नई हैं। समस्याओं के रूप में ही मनुष्य का इतिहास चला आ रहा है। नई-नई समस्याओं के उत्थान का अर्थ है जीवन का संघर्ष और उनके समाधान का अर्थ है जीवन का विकास। यह संघर्ष और विकास मनुष्य के प्रत्येक क्षेत्र की अप्रतिहत कहानी है और साहित्य के क्षेत्र की भी। जिस दिन से मनुष्य ने साहित्य में अभिव्यक्ति पाई उसी दिन से उसके जग-जीवन की समस्याओं और तत्परक समाधानों ने उसके द्वार पर धरना देना प्रारम्भ कर दिया होगा यानी साहित्य में भी संघर्ष और विकास की शृंखला अक्षुण्य है।

अनेक भारतीय विचारकों ने ऐतिहासिक साहित्य और साहित्यिक इतिहास के भीतर समस्याओं की अच्छी छान-बीन की है। वस्तुतः हमारे वैदिक ऋषियों ने प्रकृति के लम्बे-लम्बे रूपकों में उस समय की प्राकृत समस्याओं के लिये 'सत्यं शिवं सुन्दरम्' की जगह-जगह स्थापना की है। 'शिवसंकल्पमस्तु' 'इदमहमसत्यात्सत्यमुपैमि' आदि वाक्यों का सम्पुट वैदिक ग्रन्थों में चलता है। 'सुन्दरम्' की झांकी उषा, अग्नि, इन्द्र आदि की वैज्ञानिक और भौतिक स्तुतियों में संमूर्तित जान पड़ती है। सत्य का प्रकाश, शिव का विकास और सुन्दर का उल्लास हमारे वैदिक साहित्य की समस्याओं के समाधान थे जो आज भी उच्छिष्ट नहीं हुए हैं। पीछे संस्कृत के साहित्यकारों ने सत्य के प्रकाश में ओजगुण, शिव के विकास में प्रसाद गुण और सुन्दर के उल्लास में माधुर्यगुण के दर्शन किये।

समस्याओं के अवगाहन के लिये साहित्यकार की दृष्टि अणुदर्शी और दूरदर्शी दोनों ही होनी चाहिए। पहली दृष्टि के कारण वह युग-द्रष्टा और दूसरी के कारण युग-स्रष्टा कहलाता है। युग-द्रष्टा अपने पात्रों की सृष्टि में युग-समस्याओं को समाहित करता है अतः युगप्रतिनिधि कहलाता है। युग-स्रष्टा एक कदम और भी आगे है। वह अपने युग का प्रतिनिधित्व तो करता ही है, उस पर से भविष्यत् समस्याओं का युगान्तरव्यापी समाधान भी दे जाता है। हमारे देश के सबसे बड़े स्रष्टा साहित्यकार बालमीकि और व्यास हुए हैं। बालमीकि रामायण की रथ-यात्रा जीवन के नैतिक और समाज के मर्यादित सकरों को पार कर रही है। भोग, भाग्य और मर्यादा की सीमायें सामंजस्य पाकर करुण रस की सृष्टि करती हैं। वैदिक काल की समस्या थी—स्वच्छन्द विहार से उत्तरोत्तर मृगतृष्णा और कष्ट-परम्परा। समाधान था ईश्वरीय भय, धार्मिक जीवन और आचार-मूलक कर्मकाण्ड। रामायण-काल की मुख्य समस्या थी—भोग और भाग्य का संघर्ष और उसका समाधान था मर्यादित जीवन। क्रौंच-मिथुन का स्वच्छन्द भोग और दुर्भाग्य



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से उनमें से एक का बध, भोग और भाग्य का संघर्ष लेकर उतरता है। यही शोक-समस्या रामायण के मूल में है। एक ओर राम के सामने राजसिंहासन का भोग है दूसरी ओर वन-गमन का भाग्य उपस्थित है। इन दोनों का समाधान भी राम की मर्यादा में मिल जाता है। स्वच्छन्द विहार का प्रतीक रावण इस मर्यादा से टकराकर टूट जाता है। तुलसीदास ने तो इसी रावण को मर्यादा के विपरीत और भी घृणित चोला दिया। राम का मारा हुआ रावण एक बार ही जला होगा पर तुलसीदास का मारा हुआ रावण हर साल जलाया जाता है।

महाभारत की समस्यायें अपने युग के अनुसार कुछ भिन्न प्रकार की हैं। यहां शक्ति और मद के साथ सामर्थ्य और संयम का संघर्ष है। कौरव शक्ति और मद के प्रतीक हैं। पाण्डव सामर्थ्य और धर्म—भीरु संयम की मूर्ति है। कौरवों की नीति शक्ति और मद के आग्रह से निर्मिति होती है इसलिए उसका पाप, अधर्म और अन्याय से सम्बन्ध है। पाण्डवों की नीति सामर्थ्य और धर्मभीरु संयम से संचालित होती है और इसीलिये उसमें पुण्य, धर्म और न्याय का बन्धन है। कौरवों की मद-विह्वल शक्ति और पाण्डवों का धर्मभीरु कष्ट श्रीकृष्ण के नियति-चक्र से चूर-चूर होकर अन्तर्जगत की समंजस शान्ति में बिखर जाता है। वास्तव में व्यास जैसा स्रष्टा विश्व के इतिहास में दूसरा नहीं आया। उनकी सृष्टि के अन्तर्द्वन्द्व की इकाइयां इतनी स्वतन्त्र और साफ हैं जितनी ब्रह्मा की इस अनन्त सृष्टि की। ईश्वरीय सृष्टि की यही तो मार्मिकता और विलक्षणता है कि यहां एक सूरत-स्वभाव के दो व्यक्ति नहीं मिल सकते। स्रष्टा कवि की सृष्टि का भी यही वैशिष्ट्य होता है। महाभारत में यह अपनी काष्ठा पर है। युधिष्ठिर, भीमसेन, अर्जुन, दुःशासन, कर्ण, भीष्म, द्रोण, अश्वत्थामा, विदुर, धृतराष्ट्र, आदि-आदि कोई भी तो किसी से नहीं मिलता। इनमें से प्रत्येक का नाम लेते ही उसका स्वतन्त्र व्यक्तित्व इस प्रकार सामने दीख जाता है जिस प्रकार हाथ में शीशा लेते ही मुंह। और इनकी संख्या इतनी अधिक है कि इनके संघर्ष में भूमण्डल क्या समस्त ब्रह्माण्ड की उथल-पुथल जान पड़ती है। इस विलक्षण महती सृष्टि की द्वन्द्वात्मकता का समाधान श्रीकृष्ण के विराट रूप में है। श्रीकृष्ण का चरित्र एक ऐसी विलक्षण सृष्टि है जिसमें मानव की प्रवृत्ति, निवृत्ति, धर्म, नीति, ज्ञान, कर्म, सन्यास, भोग और जीवन के समस्त योग-क्षेम अपना-अपना औचित्य ग्रहण करते हुए सदा आराम से लेटे रहेंगे। मानना पड़ेगा कि व्यास की दृष्टि मानव के भावी इतिहास के प्रत्येक पन्ने पर से गुजर चुकी थी। उसने निःशेष मानवीय द्वन्द्वों का महाभारत के शान्तरस से विश्व-शान्ति में चूडान्त संस्कार कर दिया है।

इतने पर भी जो लोग जीवन-जगत की समस्याओं को और उनके समाधानपरक प्रयोजन को साहित्य के क्षेत्र में कोई महत्त्व न देना चाहें उनसे निबटना कठिन है। युगविशेष की समस्याओं के प्रति कवि की जागरूकता की मात्रा उसकी रचनाओं की उपादेयता की मात्रा है और उन समस्याओं को जीवन में घोलकर एक रस कर देना उसकी प्रेषण-पटुता और कला है। वर्तमान की कसौटी पर जब कोई रचना खरी उतर जाती है तब उसका मूल्य निश्चित होने को होता है। ऐसी रचना युग-विशेष से गुजरते

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हुए जीवन का मूल्य है जिसे समाज की मर्यादा कभी नहीं भूल सकती क्योंकि समाज उसी समय तक समाज है जब तक वह अपने जीवन को नहीं भूलता। तुलसीदास के समय की समस्याएं बहुत बदल गई हैं पर उनकी रचनाओं का अर्पित मूल्य जन-समाज के हृदय की वस्तु बन चुका है। सभी महाकवियों की रचनायें, चाहे वे किसी भी देश-काल से सम्बद्ध क्यों न हों, जीवन के शाश्वत प्रवाह के झरने होती हैं। इन झरनों का आनन्द उनके पास खड़े होकर ही लिया जा सकता है—उनके कोलाहल में डूब कर ही लिया जा सकता है। यदि शैक्सपीयर की रचनाओं में से अतिमानवीय सत्ता (सुपरनैचुरलिज्म) को अविश्वास की शिला पर पटक दिया जाय तो उसकी कला टूटे हुए कांच के टुकड़ों के ढेर के अतिरिक्त कुछ भी न रह जायगी। पर नहीं, यह अतिमानवीय सत्ता का विश्वास जीवन की जाह्नवी का तीर्थ-स्थान बन चुका है जहाँ संस्कारी मानव के मेले लगते रहेंगे। तुलसीदास ने अपने समय के जिस जन समुदाय को अमृत पिलाकर रक्षा की उसकी परम्परा क्या इतनी कृतघ्न हो सकती है कि उसे किसी भी युग में गलदश्रु याद न करे? बल्कि इसके विपरीत आशंका तो यह है कि कहीं बुढ्ढे सहृदय इसी कृतज्ञता की छाया में इतने भाव-विह्वल न हो जांय की वर्तमान की जीवन-समस्याओं से भी अलग जा पड़ें और उनके साथ समझौता करने में नई सन्तान को इतना समय लगाना पड़े कि वह समय की गति के साथ प्रगति न कर सके। यह इसलिये और भी स्वाभाविक है कि प्राचीन समस्याओं की कटुता वर्तमान में स्मृतिरूपा होने के कारण भावमात्रैकशेष रह जाती है जो बड़ी मधुर जान पड़ती है और फिर उनके तत्कालीन समाधान तो और भी मधुर होते हैं। वर्तमान की समस्याएं प्रत्यक्ष होने के कारण कटु होती हैं और उनके समाधान भी इतने मधुर नहीं हो पाते। तो फिर क्या आश्चर्य है कि प्राचीनता की अभिराम माया का व्यामोह नवीनता की उमंग को उसी प्रकार शान्ति भंग करने वाला समझे जिस प्रकार कोई बुढ्ढा बच्चों के खेल-कूद को। ऐसे ही जरठ-पण्डितों की भृकुटी छाया वाद और रहस्यवाद की किशोर कविताओं को बहुत दिनों तक धरती दिखाती रही थी। आज भी ऐसे नैष्ठिक आलोचक मिल सकते हैं जो वर्तमान कविता की स्वच्छन्द धारा के सौन्दर्य को देख कर अपना संयम नहीं बिगाड़ना चाहते। अपने समय के कुछ इसी प्रकार के व्यक्तियों के कारण कालिदास को लिखना पड़ गया था—

पुराणमित्येव न साधु सर्वं न चापि काव्यं नवमित्यवद्यम्
सन्तः परीक्ष्यान्यतरद् भजन्ते मूढः परप्रत्ययनेयबुद्धिः

इसलिये जो कुछ भी था वह पहले कहा जा चुका है, अब और कुछ भी कहने को नहीं है—यह कहना तभी ठीक होगा जब यह मान लिया जाय कि पहले जीवन था और अब उसकी मृत्यु हो गई है। बल्कि इसका प्रतियोगी प्रमाण तो यह है कि पहले की अपेक्षा आज के जीवन की समस्याएं और भी विषम हैं। इसलिये उनका समाधान और भी व्यापक तथा उदार भूमि पर होना चाहिए। रामचरितमानस और कामायनी को एक साथ रख कर देखने का धैर्य जिसमें हो उसे इस बात का पता लग जायगा कि धार्मिक धरातल पर बौद्धिक वृत्तियों की रोक थाम जितनी सरल है, बौद्धिक धरातल पर धार्मिक वृत्तियों का सन्तुलन उतना ही कठिन है। और अभी तो कामायनी को उसके पूरे मूल्य भी समाज ने

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अर्पित नहीं किये। इसके लिये समय लगता है। कमायनी को भी समय लगेगा। रामचरितमानस को भी बहुत समय तक प्रतीक्षा करनी पड़ी थी। डा० ग्रियर्सन से पहले तुलसीदास केवल भक्त थे और रामचरितमानस क्या था—यह पता नहीं, पर काव्य नहीं था—यह पता है। और शुक्ल जी के आते-आते तुलसी को अनन्त साहित्याकाश का सूर्य न कह कर शशी कहने में भी संकोच होने लगा और रामचरितमानस मानव-परम्परा का महाकाव्य बन गया।

कभी-कभी तो देश-काल की समस्याएँ इतनी भभक उठती हैं कि उनका तत्क्षण समाधान करने के लिये साहित्य में अमिधावृत्ति का ही नृत्य होने लगता है। यही कारण है कि जब काव्य के पण्डाल में ये प्रस्ताव पास किये जा रहे थे कि—

हम कौन थे, क्या हो गये हैं और क्या होंगे अभी
आओ विचारें आज मिलकर ये समस्यायें सभी (भारत भारती)

तो देश के कविता-प्रेमियों की छाती फूल उठती थी। ऐसी कृतियाँ भी तात्कालिक महत्व की दृष्टि से कम उपयोगी नहीं होतीं भले ही जीवन-व्यापी प्रभाव की न्यूनता के कारण ये साहित्यिक इतिहास अथवा ऐतिहासिक साहित्य के निर्माण में योग देकर निकल जायँ।

नितान्त आधुनिक अर्थ में यदि समस्या को लिया जाय तो यह अत्यन्त साम्प्रदायिक शब्द है। सन् १८५० के बाद की योरोपीय क्रान्ति का इतिहास इससे सटा हुआ है। सन् १८७५ में इब्सन के नाटकों से इसकी पूर्णतः स्थापना समझनी चाहिए। पीछे यह आन्दोलन फ्रान्स में आन्त्वान के द्वारा, रूस में स्टैनिस्लावकी के द्वारा और इंगलैण्ड में वर्नार्डशा के द्वारा फूला और फला। इस शब्द का व्यवस्था-प्राप्त अर्थ है कि जीवन की कोई भी समस्या, चाहे वह सामयिक हो या चिरन्तन, चाहे व्यष्टि-गत हो या समष्टिगत, तुल्यबलविरोधी तार्किक समर्थनों के द्वारा ऐसे विनिगमना-विरह के साथ उपस्थित हो कि औचित्यानौचित्य की एक-कोटिक प्रामाणिकता दब जाय और बुद्धि के तार झनझना उठें। समस्या के इसी साम्प्र-दायिक अर्थ के फल-स्वरूप समस्याप्रधान कृतियों में पर्याप्त वैलक्षण्य आ गया। प्ररूढ़ परम्परायें, प्रचलित परिपाटियाँ, जो साहित्य-शरीर में मनोरंजन, आकर्षण, कौतुक, अनावश्यक भावुकता, बनाव-सजाव, चुनाव आदि की अतिकल्पित परिधि में व्यावसायिक अधिक थीं, बुद्धिवादी युग में फिर से परीक्षणीय ठहराई गईं। पुनः परीक्षण में काल्पनिक, मिथ्या और विचार-शून्य मनोविकारों के कृत्रिम उद्गारों पर पावन्दी लगाकर, सामाजिक और वैयक्तिक जीवन की यथार्थ समस्याओं का विवेचन नाटकों और उपन्यासों का लक्ष्य घोषित किया गया। परिवर्तन और परिष्कार के अतिरिक्त नवीनता का प्रतिनिधित्व काव्य-पात्रों के माध्यम से उतर कर विकासवाद का नारा बुलन्द करने लगा और व्यक्ति-वैचित्र्य ने चरित्र-सौन्दर्य की अवतारण की। बुद्धि के सामने विकटता और उसे पंगु बनाने की स्थिति ने रचना-तत्त्वों के स्वतन्त्र विनियोग को दबोच दिया। फलतः समस्याकृतियों का रचना विधान समस्याओं को इस मन्थरगति से लाने में कमाल पाने लगा जिसमें जंग खाई हुई बुद्धि को गहरे घिस्से लगें और उसकी चमक-दमक सहज, स्वाभाविक और टिकाऊ हो। जो कर्म-संघर्ष प्राचीन रचनाओं में बौद्धिक संघर्ष का उपजीव्य था वह समस्याकृतियों

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में उपजीवी बनलर उसके द्वार पर खड़े रहने को मजबूर हुआ। अर्थात् कर्मों के द्वन्द्व केवल प्रसंग-प्रस्तावना में पड़ गये और जीवन के नाटकों को बौद्धिक द्वन्द्वो के 'भरतवाक्य' में पढ़ा जाने लगा।

दूसरी ओर रोमांस के रहस्यात्मक पक्ष पर भी चोट की गई। प्रेम को दबाने वाली प्रवृत्ति शोचनीय और संहारक समझी गई। पर साथ ही वैयक्तिक प्रेम की अवहेलना और तिरस्कार का विरोध करते हुए व्यक्ति को समाज के लिये मूलतः महत्त्वपूर्ण सिद्ध किया गया। व्यक्ति और समाज के पारस्परिक घात-प्रतिघात में व्यक्ति की रक्षा के लिए सारी शक्ति लगा दी गई। व्यक्ति कहां तक समाज के लिये झुके और समाज कहाँ तक व्यक्ति को अपने में व्यवस्थित करे—इसका समाधान खोजा जाने लगा।

जब रचनाओं का लक्ष्य ही बदल गया तब रचना-तत्त्वों में भी परिवर्तन होना अनिवार्य हो गया। रचनाशैली, पात्र, कथोपकथन, कथानक, वातावरण आदि-आदि सभी कुछ उद्देश्य के अनुसार चल पड़े। संक्षेप में नैसर्गिक जीवन की महत्ता के कारण कृत्रिमता, तड़क-भड़क, सज-धज, चटपटापन वागाडम्बर आदि को छोड़ कर इस बात को प्रमुखता दी जाने लगी कि कोई बड़ी से बड़ी बात, सरल से सरल रूप में उपस्थित की जाय। अनेक पात्रों का आग्रह, गाने-बजाने तथा कविता, भावुक प्रवृत्ति, अनावश्यक दृश्यों की बहुलता, पटविस्तार के लिये विभिन्न देश-काल की व्यवस्थाओं और घटनाओं की विभ्रममयी भरती पात्र-विशेष के साथ अनावश्यक पक्षपात, वर्गवाद और जातिवाद का अक्षुण्य पूर्वाग्रह जैसी बातों को एक हाथ से अस्वीकार कर दिया गया।

सब मिलाकर समस्याकृतियों में बुद्धितत्त्व की प्रधानता है क्योंकि समस्या यहां बौद्धिक आधार पर उठाई जाती हैं और उनका समाधान भी बौद्धिक होता है। किन्तु समस्या और समाधान को उपस्थित करने के लिये जैसा प्रभावशाली वातावरण तैयार किया जाता है वह हृदय की संवेदना के कम सहयोग से किसी प्रकार सम्भव नहीं हो सकता। इसलिये यह सोचना कि समस्या-प्रधान कृतियों में (चाहे वे योरोप की हों अथवा भारत की) साहित्यकार की संवेदनात्मक अनुमति शून्य होती हैं, किसी भी हद तक ठीक नहीं है।

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# ENGLISH POETRY BEHIND THE GUNS OF THE LAST WAR.

KUBER NATH RAY, B.A. (*Prev.*)

"It is sorrow ; shall it melt ? Ah water
Would gush, flush, green these mountains and these valleys,
We rebuild our cities ; not dream of islands."

—*W. H. Auden*

The poets of our days, dreaming of an ultra-scientific age to come, need no more pleasure—domes erected "beneath the waning moon" and haunted by their own 'fine frenzy' ; because they have heard the voices uttered by the Muse of the age from dark and close corners of life. These 'sunny domes' are images of our own sufferings. Build up a new and real city beyond this "brown fog of winter dawn". After the first World War (1914-18) these poets, on account of their helplessness to understand the confusions prevailing all around in the individual as well as in society, with its bankruptcy of morals like loyalty and patriotism, began to disbelieve in every axiom that had been fossilised and old, and sought relief in setting up two contemporary movements in English poetry, namely the Aesthetic school and the school of Imagism. The former was of escapist type with its principle of 'Arts for Arts' sake' and was, later on, dissolved in and overshadowed by the latter which advocated a new phase of thinking, a new vocabulary and new technique in lieu of old ones. Being reactionary to old aesthetes of English tradition it attached itself to a newly born movement of French literature (Mallarme : 1898 A.D.) called Symbolism. These symbolists laid stress on choice of words and their inner meaning to reopen the secret recesses of stimuli inherent in them. In France symbolism, akin to 'mysticism' 'in situ', was directed as a counter approach to modern intellectualistic current. But in English tradition the very current became the fundamental source. These poets of Imagist school chose symbols as well as theme from materialistic circles and common side of life, that is, smoke of chimney, shrill of factories and dumb torture of man. And, they used rhythmical language having poetic pattern based on stress, not on metrical foot.

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*Between the Two Explosions :*

These characteristics explain why there prevails a complex mixture of romance, psychology leading to some intellectual land-mark, in the poetry after 1914. And that is why there flows a stream of pity mixed with aversion in poetry since 1939 which is successor to that during 1914-39.

The English poetry between the two wars, specially that one which concerns with the modernist phase is mainly represented by two personalities: T. S. Eliot and W. H. Auden. There are also other poets of Eliot's generation like Miss Sitwell and E. Blunden who sustained the romantic and 'picturesque' tradition, Robert Graves and Sassoon, the writers of 'pure poetry' but hostile to traditional standards and scales, and Walter de la Mare and Masfield, the representatives of older generation. All these poets worked 'par excellence' during the last War also.

Auden and his contemporaries, C. Day Leuis, MacNiece, Spender and Empson, are known to us since 1930. They have given us a poetry having psychological, symbolic and impersonal character.

They are all in search of a scientific formula for life using their poetic symbols in an algebraical manner. We have other poets also, like Dylan Thomas and Watkins known just before the War together with Roy Fuller and Sidney Keyes, the poets engaged in the Forces.

This is what might be taken for a brief prelude to the review of the poetry since 1939 when storms gathered once again into the sky of Western Europe and Far East and later on the whole of Europe and Asia was set ablaze.

*The Poets of Older Generation :*

For a generalised review of the older poets' works during the war we must put them into three groups: (1) T. S. Eliot and Edwin Muir (2) Edmund Blunden, Miss Edith Sitwell, Walter dela Mare and Masfield (3) Robert Graves and Sassoon. The common theme of poets belonging to the first group is perpetual reality whose factors are, life, death, time, etc. T. S. Eliot in his 'Four Quarters' (1944) contemplates over the stream of 'time' keeping himself as an off-observer of its flow; and that is why his poems have not become the revelation of the time but of his own self. Muir, too, contemplates on the perpetual reality, but unlike Eliot makes himself a part of the flow and as a result of this, the human compassion comes out of him that declares the entire achievement of man only a stain of blood on a wall.

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"There was a lull
Until another in its shadow arrayed it
Came, fought and left a blood mark on the wall,
And that was all; the blood was all".

In the poets of the second group the romantic tune is dominant. Among these, Walter de la Mare and Miss Sitwell are the poets of dream and imagination as it is clear from the former's collected Poems (1942) and 'other poems' (1945), as well as from the latter's 'Street songs' (1942) and 'Green Songs' (1945) in which she sighs of

"Happiness, business and sorrow
And rose that cares not for morrow."

Edmund Blunden, the writer of pastoral poetry, who is sometimes ranked with Wordsworth in close observation of Nature, published, during the War, his 'Poems 1930-40' in which he gives traditional patterns of music, colour and the speed. Masfield also published his 'Land Workers' in which he expresses his lament for joys and sorrows of his own boyhood days.

Robert Graves and Sassoon, both wrote on trivial daily experiences, but the former went on the line of pure poetry, while the latter became centred on his own ego. Sassoon is called the most 'disillusioned poet' of older generation, and he has despised much the illusion of various traditional ideals like patriotism, loyalty, nationality etc.

*The Romantico-Intellectual Group:*

W. H. Auden, C. Day Lewis, Mac Niece, Spender, William Empson and others who fall in this category are successors of the intellectual tradition of Eliot, though they have a sympathy for the hungry and the oppressed which T. S. Eliot lacks. Eliot dyes his poetry always with a personal hue while in Auden's, as Spender rightly observes, one is seldom aware of Auden's presence, inspite of the Audenesque mood which prevails everywhere in himself and in his contemporaries. These poets do not confine themselves to the proletariat or ever sing of 'airy pleasure-dome' and 'magic casement'; they take the path of solid philosophy and give vent to the pent-up feelings of factory workers, just as their language and procedure are different from those of the Romantic Period. Besides metre, language, and procedure the difference lies in the fact that romance of modern poets is attached to intellect while that of the poets belonging to the Romantic Period was associated with feelings and imagination.

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W. H. Auden showed the most remarkable development during the last war through his 'Another Times' (1940), 'New year's Letter' (1941), and 'For the Time Being' (1945) in which besides the psychological and symbolic nature of his poetry his deep knowledge of human heart is also revealed. In 'For the Time Being', he bestows a symbolic hue to the characters of Shakespeare's 'Tempest', and expresses his own philosophy. Though Auden possesses an exhibitionic attitude towards sex, his intellectualism saves him from becoming sensuous. Even in his most fantastic and humourous songs the flashes of his satiric spirit shoot off. Here is an example of his strong sense of humour and fantasy.

"At Dirty Dick's and sloppy Joe's,
We drank our liquor straight.
Some went upstairs with Margery
Some, alas, with Kate.
And then by two and two like cat and mouse
The homeless played at keeping house."

C. Day Lewis, Mac Niece and Spender are influenced by almost all the significant characteristics of Auden's poetry, though they are more introspective. C. Day Lewis sings of pastoral and childhood romances in his sonnets written during the War. Mac Nieca published his 'Autmn Journal' (1939) and 'Spring-board' (1944) while serving as a script writer in B.B.C. In his poem Prayer before birth', the unborn child prays :

"I am unborn yet console me,
I fear the human race may with tall walls wall me
With stony drugs dope me, with wise lies lure me
On black racks rack me ; in blood baths roll me."

A. C. Ward writes "While Mac Niece is a good poet when he escapes from the limitations of modernism, Auden is often good, while within its confines." Unlike Mac Niece, Spender is more closely related to Auden specially in his war-time-writings, the chief among which are 'Poems from Spain' (1939) and 'Ruins and Visions' (1943). Spender seems to be searching for a universal experience through subjective contemplation isolating himself within modernism. But Auden does so objectively. William Empson, a Cambridge contemporary of Auden is a poet too intellectualised and of prosaic taste. A critic comparing him with Auden writes : "As compared with fluid and amorphous poetic personality of Auden, the Empson's is a rock."



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In this wild eddy of intellectualism we hear the notes of conventional beauty and charm also in poets like Kathleen Raine, Betzman and sometimes in Bottroll Rolland, who wrote a few love poems during the War.

*The Younger Generation—A Reaction :*

Among the poets known since 1939 we have Dylan Thomas, George Barker, David Gascoyne, Veron Watkins, Lauric Lie and F. T. Prince in whom we see a repulsion from the intellectualism of romantico-intellectual group. This reactionary process led them towards a pure romantic and Celtic approach. Dylan Thomas occupies the leading position in this reactionary group. His chief works are: 'Map of Love' (1939), 'Death and Entrances' (1944). His theme is ever passionate and his style is always rheotorical and word-intoxicated. While reading these lines, one becomes definitely aware of Wordsworthian air:

"And there could I marvel my birth day,
Away, but weather turned around. And the true
Joy of long dead child sang burning
In the Sun."

About his picturesque personality Spender writes: "Of poets under forty-five, he is the only one, capable of exercising a influence as great as that of Auden."*

Barker and Watkins both are the writers of 'pure poetry', while F. T. Prince and Laurie Lei write in a plain simple style free from jugglery of words. Their war-time publications are 'The Sun my Monument' and 'Poems' respectively. Gasciyene was, first, a sur-realist. But his recent volume 'Poems 1937-42' shows that he has abondoned the school.

*Miscellaneous :*

We have a good number of poets engaged in Forces also: Sidney, Alan Lewis, F. T. Prince, V. Watkins, Alan Rook and others with Roy Fuller, the writer of 'Lost Season' (1944) and Henry Treece, the leader of Apocalyptic group of English poets. Together with these members of Forces we have G. S. Fraser and Tiller who are excellent craftsman of intellectual line. These poets have nothing in common but the modern fashion of thinking. And, as their poetic development is still immature no verdict can be passed about their poetry.

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*Sad to record, the poet died last November. —*Writer.*

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Other poets of minor importance get an outlet through various literary periodicals and shoot off poems of mere experimentation-experiments in imagery, rhythmic tension, fashion of thinking and everything else—the majority of which constitutes a vague and confused literature.

*Tradition—From Albatross To Aeroplane:*

Poetry during the war has preserved the tradition of modernist phase which is a revolutionary aspect, hostile to age-long standards. But these old standards are not entirely destroyed in the said phase; On the contrary they are present, though in a transformed shape and an unrecognisable form. Thus Edmund Bluden is in close tradition of Wordsworth and Rossetti. Miss Sitwell's aristocratic imagination reminds us of the Romantic poetry. T. S. Eliot also is passionately attached to traditions. Though he experiments with the form, as traditionists rarely do, he is never formless, but the same cannot be said of his followers. J. A. K. Thomson has observed that his learned allusiveness is partly modern and partly classical and that there is its eminent example in 'Alexendra' of Lycophron, a Greek poet of the 3rd century B.C. Auden, the most modernist poet, also has borrowed characters from Shakespeare, though their symbolic significance is derived from modern thoughts.

*The Individualistic Notes are Prominent:*

Another characteristic of the poetry during the war is its individualistic anf disintegrative nature. There is almost very little in common between two poets except they are moderns and think in terms of moderns. During the War every personality was confused in his own thoughts and problems. In England there was no moral instinct like patriotism and loyalty; and war was fought by Britishers on a purely materialistic ground. In the absence of a general acceptance of unity guided by some moral sentiment attached to it, the poets had to preserve their own individual sentiments; and hence the said result.

*Hope that Illumines through the Dark:*

They despise the war-time poetry for want of faith and imagination; and their evaluation gives it no other specification than to call it the struggling of a ship without rudder,—or, at most, the fluttering of a bird who wants to explore the heavens but whose wings are fastened tightly to the earth. Undoubtedly there is no faith in the supernatural, and there prevails a complete absence of airy imagination. But there is a creative Hope. It is the chief characteristic of the war-poetry that it came from Faith to

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Hope, from sordid dreams to something tangible and solid. That is why the heart of the poet is heavy, but a hope in future reconstruction is still alive together with awareness of the present. The wrath burns throughout this vast space and through this very 'blazing pond' the poet dreams to erect a tower—

> "—that soars like an arrow
> Upwards and downwards in that blazing pond
> Climbing and diving from our life, to narrow
> The gap between the world shot in the eyes
> And receding world of light beyond."

This is the aim which steers the ship through troubled waters; this is the object which directs the wings of the lyre-bird; and this is the faith which guides the steps of the poet on by-paths where angels fear to tread, but the son of man must go and search.

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# UNIVERSITY EDUCATION AND NATIONAL NEEDS

PRANNATH MOHANTY,

*M.A. Final (Politics)*

Lest we forget the world context while viewing the problem of University Education in India from the angle of national needs, we would like at the outset to note in the lines of the Preamble of the Constitution of the UNESCO that "Since Wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed." Education with this basic assumption is not a mere training for a career but a training and culture in humanities, an understanding of the deeper values of life and the dignity of man, a faith in the great ideals of justice, equality, fraternity and freedom for all in the social fabric. Broadly education is a process from the cradle to the grave. But the education that touches the most formative and indelibly impressionable part of an individual life is the University education. And in India specially which has to take great strides to be at par with the civilised world the problem of nurture and guidance of its youth assumes gigantic importance.

How serious is the problem and how unsatisfactory has been our endeavour to resolve the same can be clearly felt if we have an inkling of the desperate sugestion of Pandit Nehru in his address at the first meeting of the University Grants Commission on Dec. 28, '53 for the closure of the Universities in India for some time. Nehruji wanted to create thereby a mental crisis so that educational problems may be given serious thought. We have no doubt that his suggestion is not the result of calm reflection but the expression of utter helplessness in the matter. Anyhow it is not thought that is wanted but some tangible action which has been long overdue. The Radhakrishnan Commission and the Mootham Inquiry Committee Reports have already seen the lime-light but the problem still stares us in the face. An imaginative approach to the whole issue recognising our national needs and capabilities is highly desirable and necessary.

What are our national needs ? India as a Republic has chosen the path of democracy. In a war-torn and ideologically divided world she has decided to be the bastion of peace, the harbinger of a new approach in the inter-national life based on cooperation and understanding. For this destiny that history and geography have conspired to put in the hands of India her children, the youth, the cream of the nation have got to be

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trained to uphold the standards of virtue and humility by imbibing all along the spirit of democracy in their day-to-day life. Mere formulations of ideals in the constitution are not enough. The spiritual strength of India must not be diminished and the vitality of the West that can be nurtured in Indian fauna and flora for the rejuvenation of under-developed masses must not be missed. This has been epitomised in a few words of Gandhiji who says that University education like the whole scheme of training "should be so developed as to make the youth of the country true representatives of our culture, our civilization, the true genius of our nation." Along with Dr. Radhakrishnan we would do well to keep in mind that the basic need of India is the growth of a feeling of national unity. "The unity", as he has said, "is not one of physical geography ; it belongs to the realm of ideas. It is a matter for men's minds and hearts." "We must therefore guard ourselves against separatist tendencies of language, religion and province. It is in the Universities that we should develop a corporate feeling and a feeling of social purpose." Broadly speaking University Education should be selective and distinguished, marked by intellectual leadership with a common national purpose of securing a juster social order than what we are in for the benefit of humanity at large.

What are our capabilities to reorganize University education to reach such a high level ? Capabilities involve men and material and organization, and all of them hinge on the question of finance. We are a vastly populated land but have not the requisite talent for our purpose here. Our Universities have not been well equipped to carry on their task efficiently and effectively. There is the apathy and indifference of the Indian mind—the teacher, the student, the parents, the statesman, the reformer and the layman have all combined to keep away from mobilising all our resources to subserve the needs of the nation on this aspect. The larger obligations of society have been forgotten even when the more acute and pressing needs of national survival exist no more. The authorities even now post to concentrate on the immediate needs of the day. But as a matter of fact we are concentrating neither on the present nor on the future demand of our nation. There is only a grouping in the dark here in the system of education as anywhere else with a few puerile modifications off and on. It appears as if the whole aspect of organisation is postponed consequently only to hasten, in the process, the day of national suicide. The problem of finance can easily be resolved the moment the order of priority is settled. If as a nation in the later half of the 20th century we put aside education

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as the second question, we have doubt in our mind who will take care of such a nation. We never wish to go to the extent of saying that it is the price of leadership to provide finances for education by any means whatsoever, but what we would like all of us to remember is that it is the duty of the government to provide such educational opportunities to its citizenry as to extract the best out of man (or woman) for the well-being of the nation at large.

Viewed in this light we see in India a great deal lacking all around. Hence first and foremost, we would invite improvements in the following lines.

Attempts at all levels have to be made to shorten the gulf of social inequality to a ratio (we may say for the time being) 1 : 10. If education is 'for life and through life' the life that is around a student must be decent and inspiring. Only a human approach to the problem, leave aside doctrines and dogmas, makes it imperative to wipe out, altogether, the unnatural division of 'haves' and 'have-nots' to ensure the fullest development of human personality. Some social bias has to be given to the whole scheme of training specially at the University stage where it lacks it most. Peripatetic parties of students and teachers may visit farmers and artisans, craftsmen and factory-workers as a part of their curriculum to maintain their contact with national life and its urges. Residential universities should be more popularised and used as an example of community living wherein evils like untouchability can be learnt to be uncompromisingly eradicated. We think at the University stage (after the Agra University Act there the studies upto Intermediate classes would be separated from University Education) more specifically at its upper limit, i.e. post-graduate and research stage more and more contact of the two sexes of students is rather a help than a hindrance to the growth of proper outlook that makes a nation great. It is positively desirable to foster that emotional kinship and understanding of both the parts of society by each other, for it will make human life a fuller and richer one.

Apart from developing such a new temper and congenial climate for University education there is need of reform in institutional aspect as well. Though there are so many Universities in India only a few—Bombay, Madras, and Calcutta—can claim to have traditions going back about a century. Most of our present-day Universities have no specific heritage of their own in the sense of unique contribution as their *raison d'etre*. Dr. Dongerkery's book "Universities in Britain" notes proudly: "If Oxford and Cambridge concentrate on humanities and pure science, the civic uni-

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versities provide training in technology and social studies on account of their contiguity to the great manufacturing and industrial centres." "In India" as the author has hinted "they all seem to be competing with each other on a level of monotonous mediocrity." As a matter of fact the whole calibre of University education in India has been deteriorating miserably. The wastage of national time and energy is again tremendous. The high percentage of failure of students in our universities is a dark commentary on the whole system and apparatus of our training. We shudder to think how a student will fail if he has really chosen himself for study and his choice has been approved by expert and he is under regular guidance of those who have seen or at least have glimpses of the light.' But the practical position as it obtains in India does not offer itself like that. Hence on the issue of quality or standard of University education we come face to face with two problems (i) the quality of teachers and (ii) the quality of students.

It is clear to any superficial observer of our contemporary life in India that the genius that is out from the portals of University usually finds its way to administrative services and the like. Consequently the University teaching staff is not what it ought to be. Salaries of teachers are very inadequate. Provision for their accommodation is far from satisfactory. Most important of all the teaching profession is no more held in that high esteem in which it was in India in the ancient 'Guru-Kula' days. Therefore there is much evidence of low morale among University staff. We must get the right type and the requisite number of men to guide the youth. For this, equally lucrative amenities should be provided for educational services as elsewhere and a feeling of their 'belonging' to a great national endeavour carefully fostered.

Of late we have seen many signs of indiscipline among students and in our considered opinion turbulence is the result of an all-round frustration, a sense of dissatisfaction arising out of lack of any social purpose in the whole scheme of University education. Universities go on producing degree-holders in mass scale without any care for the quality of the produce and the needs of the country. There should be overhaul planning for admission and guidance of students. Here merit not money should be the criterion of entry or summary rejection. There must be proper tutorial system with adequate provision for teaching and 'know-how.' The concept of examination has got also to be changed. As it is today the student facing examination after a pre-determined interval is inclined to be slack

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in his work and to follow 'Made Easies' just a few days before his examination somehow to cross the bar of one test. As a result of this the student is neither doing justice to his curricula nor is he well-equipped to face life squarely. So we think, the student should be a full-time student and a whole-time examinee. Regular progress report of his work should be kept by the staff concerned and that is to be the basis for the assessment of his effort. And the weeding out of the misfit and incompetent as noted beforehand, has got to be done much earlier. Since right kind of talent will be drawn for right kind of study or research, it will be essential not to spare any sustained zeal in any effort once undertaken. The creation of eleven research institutions* by the National Government is a step in the right direction. Though they are not allied to universities as such but they necessitate technical skill which may be directly acquired from such institutes or from University laboratories. The point is that these institutions create an impetus in the educated youth to develop technical knowledge and training which is more and more in demand because of the growing awareness of the country for its material upliftment. In the field of Industry and Applied Sciences we have made some progress by having provision for laboratory work in institutions like Sindri Fertiliser, Chittaranjan Locomotive Works, Mandi Salt Works, Radar and Wireless Project' etc. But much has not been done in these fields if for reasons of finance, also, to a very great extent for the dearth of modern technical skill. To have an integrated and planned development of our national economy it is desirable that the requisite human skill should be supplied by the Universities. But the problem is to make an objective survey of the different sectors of employment—primary, secondary and cursory—of our national life and then to fit in the students in the appropriate setting. And for years to come we have no doubt in our mind that the services of University products

*1. The National Physical Laboratory, New Delhi
2. The National Chemical Laboratory, Poona.
3. The National Metallurgical Laboratory, Jamshedpur.
4. The Fuel Research Institute, Jealgora.
5. The Central Food Technological Research Institute, Mysore.
6. The Central Drug Research Institute, Lucknow.
7. The Central Glass and Ceramic Research Institute, Calcutta.
8. The Central Road Research Institute, Delhi.
9. The Central Building Research Institute, Roorkee.
10. The Central Leather Research Institute, Madras.
11. The Central Electric-Chemical Research Institute, Karaikudi.



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will be utilized in the cursory and in some case secondary sectors of employment i.e. for the purposes of mainly mental work and organization of our agriculture and industry. With the progress of small-scale mechanisation in agriculture, adoption of improved types of seeds and plants, fertilisation etc. technical skill will be increasingly in demand in the field of agriculture. In the field of industry though, not in quantum as much, but, in quality and calibre, perhaps, better skillful leadership will be called to service, for, with the execution of great river-valley projects through the length and breadth of the country, it is reasonably expected that availability of cheap electricity will introduce Swiss rural life of small-scale industries in the Indian countryside as well as Western prototypes of great factories in our cities. All the above clearly anticipate that the universities have got progressively to cater to the needs of rapid scientific developments in the country. We would therefore invite a change of emphasis from general arts and pure science to applied science, technology, engineering and the like.

Some problems concerning psychological and social training of the students have got also to be noted. Facilities for recreation in the midst of work may be more scientifically arranged. Provision for refreshment, informal meetings of friends, light music and visual education etc. are a few methods apart from provision for parks, gardens, games and so on. We would favour lessening of holidays (an UNESCO sub-Committee recently expresses for general adoption of such a view as well) in Indian universities. Even with holidays we do not think they should be viewed as no-work days just to while away the time in utter idleness. Some creative work, in the field of social reform e.g. observance of austerity, love for Swadeshi, recognition of dignity of women, abolition of caste system etc. or even excursions in plains and mountains may be made which will if undertaken in the proper spirit, sublimate one's mind and make one's heart leap in joy when the spirit is rendered daring before the vast panorama of Indian life from the Capa Camorin to Himalayas. In such a jovial mood as it is after holidays the mind is most receptive and reflective on anything thrown to its catch. Furthermore a sense of community feeling is the inevitable result of the above pattern of outdoor living in excursions and picnics. A sense of corporate life is also fostered by Students' Unions and allied cultural study circles wherein really they learn the first lessons of citizenship and the art of leadership (apart from the intellectual sustenance they derive therefrom). For this, we would like such bodies to be immensely popularised but not 'imposed'—they must be left to the students and to their

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cooperative endeavour with interested and keenly responsive teachers in charge.

But all the above will not be of much avail if the body does not step in quickly after the mind. Almost all Indian Universities have got limited provision for ancient Yogic exercises, modern games—western and eastern, training in the National Cadet Corps. A few others have been of late provided for a few auxiliary NCC which to some extent serves the purposes of the original NCC. And then, the inauguration of the Territorial Army which is more akin to the regular army in its composition, in the scope of its training and in the role assigned to it, has also taken place. Nevertheless there is no denying the fact that very inadequate measures have been taken for physical and military training *pari pasu* University education. Demand for greater attention in this regard has been often voiced by leaders of public opinion for reasons of normal disciplining of the youthful exuberence and the peculiar necessity of the nation at present. We are convinced that greater considerations will have to be made on this aspect of the whole scheme of a student's training because body-building, observance of the principles of hygiene are of first-rate importance to any nation that does not decide to be a stunted and emaciated people.

Before we close we would like to say a few words on how best to maintain the sanctity of University Education. No University can successfully perform its duties if it lacks a reasonable degree of academic freedom. In India where a politician is a Pontiff in every sanctuary it becomes terribly difficult to keep politics away from the temple of learning. Political parties must refrain from penetrating into the administration, management and day-to-day problems of University life. And also the intervention of the state should be the least possible. As a matter of fact the practice of University autonomy is well-established in Western democracies. The Chinese Communists might burn the classics or the vanguard of the Soviet proletariate, their Communist Party, might decide what is to be taught in the Universities but that is not the way a seeker of truth should pursue his course. If the temple of learning is comely and beautiful,free and fearless, let the wind blow from any side for they will tear away the cobwebs and supply fresh air and energy to the devotees therein and make them fuller and richer in body, mind and soul to face trials and tribulations of life with calmness and sobriety.

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# कालिदास की करुणा

डी० डी० शर्मा रिसर्च स्कालर, संस्कृत विभाग
का० हि० वि० वि०

जयन्ति ते सुकृतिनो रससिद्धाः कवीश्वराः ।
नास्ति येषां: यशःकाये जरामरणजं भयम् ।।

संस्कृत साहित्य के मूल में कुछ ऐसे अजस्र प्रवाही स्रोत हैं जो कि अपनेमें इस विशाल साहित्य सागर की विभिन्न धाराओं को छिपाये हुए हैं। किसी भी धारा के मूल स्रोत को जानने के लिये हमें उसी उद्गम की ओर जाना होगा। यह कहना असत्य न होगा कि लौकिक साहित्य का जन्म ही कवि की करुणा पुकार के साथ हुआ। वही 'मा निषाद' की करुणा धारा ही धीरे धीरे साहित्य सागर की ओर बढ़ने लगी। समय समय पर उसमें आकर मिलने वाली धाराओं ने उसे आगे बढ़ने में योग दिया। इस दिशा में कविकुलगुरु कालिदास का सहयोग प्रत्यक्ष और महान् था, जिसने कि साहित्य की 'दृश्य' और 'श्रव्य' दोनों ही धाराओं को इस हृदयस्पर्शी रस से परिपूर्ण कर उसमें एक अद्भुत प्रवाह ला दिया। महाभारत के निर्वेदात्मक वातावरण से निकलने वाले पाठक ने जब इस महाकवि की श्रृङ्गार और करुणा से लहराती हुई धाराओं का पान किया होगा तो वह अपनी निर्वेदजन्य विरक्तता को भूल कर फिर एक बार संसारी बन गया होगा; उसे फिर से इस संसार में प्रेम और सरसता के दर्शन हुए होंगे। धन्य है वह युग प्रवर्तक कवीश्वर ! जिसने एक बार जगत्-प्रवाह को ही बदलने का बीड़ा उठाया। उस विनाशपूर्ण महाभारत के रक्तपात और अत्याचार से उकताए हुए मानव को माधुर्य और सौन्दर्य का दर्शन कराया।

वर्तमान विचार धारा में कालिदास को प्रेम और श्रृङ्गार का ही प्रतिनिधि कवि माना जाता है किन्तु बात वास्तव में ऐसी नहीं। उस महाकवि की प्रतिभा को एक ही अङ्ग में सीमिति करना उसके साथ अन्याय करना होगा। साहित्य के सभी क्षेत्रों में उनका अचार्यत्व समान ही है। उनका 'कवि कुल गुरु' विशेषण ही इस बात का द्योतक है कि वे श्रृङ्गार ही नहीं अपितु सभी रसों के गुरु (आचार्य) हैं। यद्यपि साहित्य क्षेत्र में भास की देन इनसे पूर्व की है किन्तु वह 'कविता कामिनी के केवल हास मात्र हैं। कवित्व की समस्त कलाओं का 'विलास' तो कालिदास में ही आकर उल्लसित होता है। तब यह कैसे शंका की जा सकती है कि करुण या अन्य किसी रस में उनकी सफलता न मिली हो। यह सत्य है कि श्रृङ्गार और विशेष कर विप्रलम्भ श्रृङ्गार में उन्हें अद्वितीय सफलता मिली है किन्तु करुणा की धारा प्रवाहित करने में भी उन्हें बेजोड़ ही कहना होगा। चाहे उनका करुण रस भवभूति के करुण की भांति विक्षिप्तावस्था तक न पहुंचा हो किन्तु उसमें मानव हृदय के कोमलतम भावों को सुकुमार हाथों से छूने की पूर्ण क्षमता है तथा कालिदास को उसके एकाङ्गी नहीं बल्कि सर्वाङ्गीण रूप को चित्रित करने में प्रशंसनीय सफलता मिली है। एक

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ओर रघुवंश में महाराज 'अज' को अपनी प्रेयसी के वियोग में विलाप करते हुए सुनते हैं तो दूसरी ओर कुमार सम्भव में 'रति' को अपने प्रियतम 'कामदेव' के लिए कुररी के समान करुण क्रन्दन करते हुए। इस प्रकार उस 'रससिद्ध कवीश्वर' ने स्नेह के दोनों ही आलम्बनों को लेकर करुण की पुष्टि की है।

कितना मर्मस्पर्शी है वह दृश्य जब कि भगवान् शंकर के द्वितीय नेत्र से उद्भूत अग्नि से दग्ध 'भस्मावशेष मदन' को देख कर पतिप्राणा रति मूर्च्छित हो जाती है। नव वैधव्य की असह्य वेदना का अनुभव करने के लिये ब्रह्मा के द्वारा जगाई जाने पर जब यह बाला चेतना को प्राप्त करती है तो देखती क्या है कि उसके समक्ष पुरुषाकार भस्म का एक ढेर पड़ा है। उसे देख कर वह विह्वल होकर विलाप करने लगती है। वह विलाप इतना हृदय विदारक है कि अचेतन प्रकृति भी उसके साथ रोने लगती है। वह कहती है—हे नाथ! तुम्हारे जिस शरीर से विलासियों के शरीर की तुलना की जाती थी उसे इस दशा में देखकर भी मेरी छाती फट नहीं गई। वास्तव में स्त्रियों का हृदय कितना कठोर होता है। तथा च

क्वनु मां त्वदधीनजीवितां विनिकीर्यः क्षणभिन्नसौहृदः।
नलिनीक्षतसेतुबन्धनो जलसंघात इवासि विद्रुतः ॥ ४.६ ॥

अर्थात् जिस प्रकार तीव्र गति युक्त जल-प्रवाह उसमें बहने वाली कमलिनी को कूल पर फेंक शीघ्रता से निकल जाता है उसी प्रकार केवल तुम्हारे ही आश्रय पर जीवित रहनेवाली मुझ अभागिनी से नाता तोड़ कर तुम भी चल दिए। फिर कहती है—मैंने तुम्हारी इच्छा के प्रतिकूल कभी कोई कार्य नहीं किया; कभी तुम्हारी कोई बात नहीं टाली, फिर अकारण ही मुझ विलखती हुई को दर्शन क्यों नहीं देते।" इसी प्रकार कितनी ही अतीत की प्रणय घटनाओं का स्मरण करती है जो कि उसकी शोकाग्नि को प्रदीप्त करने में धृत का कार्य करती हैं। फिर उलाहना देती है :—

हृदये वससीति मत्प्रियं यदवोचस्तदवैमि कैतवम्।
उपचारपदं न चेदिदं त्वमनङ्गः कथमक्षता रतिः ॥४.९॥

(तुम जो मीठी मीठी बातें बनाया करते थे कि तुम मेरे हृदय निवास करती हो, विदित होता है कि वह सब केवल मुझे प्रसन्न करने के लिए झूठ बोला करते थे। अन्यथा यदि ऐसी बात न होती तो यह कैसे हो सकता कि तुम्हारा शरीर जल कर भस्म हो जाय और मुझे कुछ भी न हो) अब तुम्हारे बिना घने अन्धकार से पूर्ण रात्रियों में विजली की कड़कड़ाहट से भयभीत हो उठने वाली कामिनियों को उनके प्रियों के घर तक कौन पहुँचावेगा? अब तुम्हारे अभाव में कामनियों का मदिरापान, चन्द्रमा का उदय होना तथा कोयल की कूक से गूंजता हुआ आम का बौर सब निष्फल हैं। सुरत काल की बातों का स्मरण कर मेरा हृदय विदीर्ण होता जा रहा है। हे कामकेलि-चतुर! तुमने अपने हाथों से मेरा जो वसन्ती शृङ्गार किया था वह तो अभी ज्यों का त्यों रखा है किन्तु तुम्हारा वह सुन्दर शरीर न जाने कहां चला गया! इत्यादि। उसका पति प्रेम ऐसा अगाध और

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श्रेष्ठ है कि वह कामदेव के बिना क्षण भर भी जीवित रहना अपने लिये कलंक समझती है और उसी के साथ भस्म हो जाने को उद्यत हो जाती है। उस समय कामदेव के सखा वसन्त को वहां आया देख कर वह फूट फूट कर रोने लगती है। अपने प्रिय से सम्बन्धित व्यक्तियों या वस्तुओं को देख कर शोक के वेग का दूने प्रवाह के साथ उमड़ना एक स्वाभाविक ही बात है। वसन्त से कहती है कि मैं अवश्य ही अपने पति का अनुगमन करूंगी। क्योंकि :—

शशिना सह याति कौमुदी सह मेघेन तडित् प्रलीयते।
प्रमदा पतिवर्त्मगा इति प्रतिपन्नं हि विचेतनैरपि ।। ४.३३।।

(चांदनी चन्द्रमा के साथ चली जाती है और विजली बादल के साथ ही विलीन हो जाती है। जब अचेतन पदार्थों में भी इस प्रकार पति का अनुगमन होता है तो मैं चेतन होकर उसका अनुसरण क्यों न करूं।) इस प्रकार वह रो-रो कर अपने प्राणनाथ के सखा वसन्त से चिता बनवा कर उसमें अग्नि लगाने के लिये अनुनय विनय करती है। कहती ह कि हम दोनों का लाथ ही तर्पण करना और श्राद्ध के लिये नई कोपलों सहित आम्र मञ्जरी अवश्य लाना क्योंकि वह उन्हें बहुत प्रिय थी।

इस प्रकार महाकवि ने अद्भुत सफलता पूर्वक नारी हृदय के शोक को पाठकों के समक्ष उँड़ेल कर रख दिया है। सहृदय पाठक स्वयं अनुभव करेंगे कि इस विलाप में नाम मात्र को भी कल्पना वा अत्युक्ति का सहारा नहीं लिया गया है। नारी हृदय के शोक-संवेगों का जितना स्वाभाविक तथा मनोवैज्ञानिक चित्र यहां चित्रित किया गया है उतना शायद ही कहीं और मिल सकेगा। अनिरञ्जना से दूर रख कर करुणा की नैसर्गिक छटा की रक्षा की गई है। कौन ऐसा हृदयहीन व्यक्ति होगा जो कि फूट-फूट कर रोती हुई रति को देख कर द्रवित न हो उठेगा और उस अभागिनी के दुर्भाग्य पर थोड़ी देर के लिये दो आंसू न बहा देगा ? यह है कवि के हृदय की रसानुभूति जो कि करुणा के क्षेत्र में भी वही 'विलास' दिखलाती जो कि शृङ्गार के क्षेत्र में।

रघुवंश के अष्टम सर्ग के अध्ययन से पता चलता है कि महाकवि ने केवल नारी हृदय की वीणा के कोमल तारों को ही नहीं वल्कि कठोरता के आवरण से ढके हुए पुरुष की हृदय बीणा के तारों को भी करुण स्वर में झनझनाने में समान ही सफलता प्राप्त की है। नारी पुरुष के लिये केवल भोग की वस्तु नहीं वल्कि वह उसके जीवन में सार्थकता लाने वाली प्रेरणा है और उसके बिना जीवन किस प्रकार भार मालूम होने लगता है इसी को कालिदास ने 'अज-विलाप' के द्वारा दिखलाने का प्रयत्न किया है। पुरुष अपनी प्रेयसी से केवल बलिदान चाहता ही नहीं वरन् स्वयं भी कर सकता है। वियोग में जितनी विकलता नारी को हो सकती है उससे किसी प्रकार भी कम पुरुष को नहीं। इस शाश्वत तथा नैसर्गिक भावना का प्रत्यक्ष चित्र वहां पर उपस्थित किया गया है।

महाराज रघु की मृत्यु के उपरान्त उनके पुत्र अज ने राज्य-भार संभाला तथा प्रजापालन करने लगे। वे अपनी प्रेयसी इन्दुमती से अत्यधिक स्नेह करते थे। एक दिन वे उसके साथ राजोद्यान में विहार कर रहे थे कि उसी समय नारद मुनि भगवान् शंकर की

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आराधना करने के लिये, आकाश मार्ग से, गोकर्ण धाम को जा रहे थे। उनकी वीणा के सिरे पर स्वर्गीय पुष्पों से निर्मित एक माला लटक रही थी जो कि हवा के झोकों से खिसक कर रानी इन्दुमती के वक्षस्थल पर आ गिरी। उसके पड़ते ही रानी प्राणहीन होकर भूमि पर गिर पड़ी और उसके साथ ही महाराज अज भी मूर्छित होकर वहीं पर गिर पड़े। सेवकों के द्वारा उपचार किए जाने पर राजा को तो चेतना आ गई किन्तु रानी को नहीं। तब उस प्रेमी राजा ने अपनी प्रियतमा को गोदी में रख लिया और विलाप करना प्रारम्भ कर दिया। कवि उसीका वर्णन करता है :—

विललाप स वाष्पगद्गदं सहजामप्यपहाय धीरताम्।
अभितप्तमयोऽपि मार्दवं भजते कैव कथा शरीरिणाम् ॥८.४३॥

(उनका स्वाभाविक धैर्य जाता रहा, गला भर आया, नेत्रों से अविरल अश्रुधारा बह चली, और वे फूट-फूट कर रोने लगे। यह स्वाभाविक ही था। जब तीव्र आंच को पाकर लोहा भी पिघल जाता है तो इस महान वियोगाग्नि से उनका कोमल हृदय द्रवित हो उठा इसमें क्या आश्चर्य!) वे रोते हुए कहते जाते हैं :—हाय! क्या फूलों से भी किसी की मृत्यु हो सकती है? यदि ऐसा ही है तो कहना चाहिए कि दुर्भाग्य किसी भी रूप में मृत्यु को ला सकता है। अथवा मालूम होता है कि कोमल वस्तु को नष्ट करने के लिये दैव कोमल वस्तु का ही प्रयोग करता है क्योंकि देखा जाता है कि कमलिनी को नष्ट करने के लिये पाला ही पर्याप्त होता है। पुनः तर्क से निराश होकर दैव के समक्ष अपनी असमर्थता प्रकट करते हुए कहते हैं :—

स्रगियं यदि जीवितापहा हृदये किं निहिता न हन्ति माम्।
विषमप्यमृतं क्वचिद्भवेदमृतं वा विषमीश्वरेच्छया ॥८.४६॥

(यदि इस माला में ही मारने की शक्ति है तो लो मैं इसको हृदय पर रख लेता हूं; लेकिन मुझे क्यों नहीं मारती। (अतः निश्चित है कि) ईश्वर की इच्छा ही बलवती है, क्योंकि उसकी इच्छा से कहीं तो विष भी अमृत हो जाता है और कहीं अमृत भी विष।) अतः मुझे तो ऐसा मालूम होता है कि :—

अथवा मम भाग्य विप्लवादशनिः कल्पित एष वेधसा।
यदनेन तरुर्न पातितः क्षपिता तद्विटपाश्रिता लता ॥८. ४७॥

(यह मेरा ही दुर्भाग्य कि विधाता ने इस माला को ऐसा वज्र बनाकर मारा कि जिससे वृक्ष तो बच गया और उसपर लिपटी हुई लता नष्ट हो गई।) फिर इन्दुमती को संकेत पूछने लगते हैं—हे प्रिये, तुम तो अपराध हो जाने पर भी कभी मेरा तिरस्कार नहीं करती थीं फिर आज क्योंकर एकाएक मुझ से बोलना तक नहीं चाहतीं? क्या तुम मुझे झूठा प्रेमी समझ कर मुझसे विना पूछे ही परलोक को चली गईं? इत्यादि। इस प्रकार विवेक शून्य होकर उससे प्रश्न करने लगते हैं; अपने प्राणों को धिक्कारने लगते हैं कि वे एक बार जाकर फिर क्यों इस वियोग को देखने के लिए लौट आए!

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कितनी करुणा आती है उस प्रेमी पर जो कि अभी कुछ क्षण पूर्व अपनी प्रेयसी के साथ आनन्द-पूर्वक बिहार कर रहा था और अचानक ही उस युग्म में से एक सर्वदा के लिये महामौन धारण कर लेता है। जब कि संसार से विरक्त महर्षि वाल्मीकि का हृदय क्रौञ्च-मिथुन में से एक का बध देखकर शोकाभिभूत हो उठता है और वही 'शोक श्लोकत्व' को प्राप्त कर सकता है तो क्या कालिदास के लक्ष्यीभूत पाठक का हृदय इस प्रणयी युग्म में से एक के नष्ट होने पर दूसरे के करुण क्रन्दन को सुनकर द्रवीभूत नहीं हो सकता ? मानव हृदय विशेष रूप से प्रणय-संवेदनशील तो पाया ही जाता है। कैसी विडम्बना है भाग्य की ! कितना नश्वर है यह मानव जीवन ! अभी उसके मुख पर से सम्भोग की थकावट से उत्पन्न पसीने की बूदे भी नहीं सूखीं; और वह चल बसी (८.५१) ज्यों-ज्यों अतीत की सुखमयी घटनाओं तथा अपनी प्रेयसी के गुणों का स्मरण करते हैं त्यों त्यों शोकाग्नि प्रदीप्त होती जाती है। कहते हैं कि—'देखो चन्द्रमा से रात्रि का पुनः मिलन हो जाता है; और रात्रि के बीत जाने पर चकवा भी अपनी प्रेयसी चकवी को पा लेता है, अतः उन्हें वियोगजन्य दुःख थोड़े ही समय के लिये होता है; परन्तु तुमतो मुझे सदा के लिये छोड़कर चली जा रही हो, बताओ मैं क्यों कर न विरहाग्नि में जलकर भस्म हो जाऊँ (९.५६) वास्तव में 'इन्दुमती से विमुक्त होते ही उनका धैर्य लुप्त हो गया, आनन्द जाता रहा, गाना बजाना दुःखदाई हो गया, ऋतुएँ आकर्षणहीन हो गईं, सजाव श्रृंगार व्यर्थ हो गया और शय्या शूनी हो गई (८.६६) क्यो न हो भला ऐसा ? वह तो उसकी—"गृहिणी सचिवः सखी मिथः प्रियशिष्या ललिते कला विधौ" थीं। वह इतना रोया कि उसे देखकर वृक्ष और लताएँ भी अश्रुपात करने लगीं। जब उन्होंने नगर में प्रवेश किया तो उनकी दशा इतनी करुणाजनक हो गई थी कि नगर भर की स्त्रियाँ फूट फूटकर रोने लगीं। मानो आज का शोक इनकी आँखों से बह निकला हो।

उपर्युक्त वर्णन में कितनी सबल तथा भावपूर्ण भाषा में कवि ने प्रेमी के हृदय के करुणापूर्ण उद्गारों की व्यञ्जना की है। विलाप एकदम स्वाभाविक है। कहीं भी उसे बढ़ा-चढ़ा कर चित्रित करने की चेष्टा नहीं की गई है। रस की पुष्टि के लिये बीच-बीच में उद्दीपन विभाव के रूप में अतीत की श्रृङ्गारिक घटनाओं का स्मरण कराया गया है। कवीश्वर ने आनन्द के वातावरण के बीच अचानक विपत्ति का पहाड़ गिराकर उसकी अनुभूति को कई गुना तीव्र कर दिया है। कहां तो महाराज अज कुछ ही क्षण पूर्व उस अलौकिक सौन्दर्य की प्रतिमा इन्दुमती के साथ प्रमद बन में विलास क्रीड़ा में मग्न, आनन्द लोक में विचरण कर रहे थे और कहां एक क्षण बाद ही उनको हृदयेश्वरी उन्हें विलखता छोड़कर मृत्यु की गोद में सर्वदा के लिये सो जाती है। कैसी हृदय द्रावक है यह घटना। कौन ऐसा संवेदनाशील व्यक्ति होगा जिसका हृदय इस घटना का स्मरण कर द्रवित न हो उठेगा। प्रतीक रूप से 'अज' और 'रति' का शोक समस्त मानव जाति के प्रेमियों का ही शोक है।

कालिदास ने केवल दो प्रेमियों के वियोग जन्य शोक ही नहीं बल्कि परिस्थिति गत शोक का भी सुन्दर चित्रण किया है। वे कवि-कुल-गुरु न ठहरे। इसलिये उन्हें तो अपने उत्तरवर्ती शिष्य वर्ग के लिये सभी तरह का नमूना तैयार करता था। इस प्रकार

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परिस्थितियों से उत्पन्न शोक का दर्शन हमें रघुवंश के १४ वें सर्ग में सीता-परित्याग के अवसर पर होता है। बेचारी पूर्णगर्भा, पतिप्राणा सीता को लक्ष्मण, राम की आज्ञानुसार, छल से लेजाकर गंगा के उस पार हिंसक जन्तुओं से पूर्ण वियावान जंगल में छोड़ आते हैं। कितनी महान व्यथा हुई होगी उस पतिव्रता को जब उसने लक्ष्मण के मुख से अपने विषय में जनापवाद तथा परित्याग की बात सुनी होगी। कितनी विकलता हुई होगी उस गर्भवती को जिसने अपने आप को, मूर्च्छा से उठने के बाद, सुनसान बीहड़ बन में अकेली पाया होगा। इसका अनुमान लगाना सहज नहीं। प्रतीत होता है परम कारुणिक महाकवि भी जगज्जननी सीता को अधिक देर तक दीन और असहाय अवस्था में बिलखती हुई न देख सके। इसलिये वे यथा शीघ्र उन्हें सान्त्वना देने को व्यग्र हो उठे। और करुणा सागर महर्षि वाल्मीकि को वहां बुला लाए। फिर भी लक्ष्मण के लौटने और वाल्मीकि के पहुंचने में जितना भी थोड़ा समय लगा उसी में कवि ने संक्षेप में संकेतात्मक और व्यञ्जनात्मक भाषा में अपने हृदय की करुणा को प्रकट कर ही दिया है। वे कहते हैं ज्यों ही लक्ष्मण उनके सन्देश को ग्रहण कर उनकी आंखों से ओझल हुए त्यों ही विपत्ति के भार से व्याकुल सीता जी, डरी हुई कुररी के समान फूट फूट कर रोने लगीं (१४.६८) यहां पर 'कुररी के समान' कह कर उपमा के आचार्य ने अधिक वर्णन की आवश्यकता न रखकर सीता की समस्त व्यथा को हृदय-संवेदन बना दिया है। उनके रोने का अनुमान तो इसी से लगाया जा सकता है कि वहाँ की चराचर प्रकृति उनके साथ रोने लगती है—

नृत्यं मयूराः कुसुमानि वृक्षाः दर्भानुपात्तान्विजहुर्हरिण्यः।
तस्याः प्रपन्ने समदुःखभावमत्यन्तमासीद्रुदितं वनेऽपि ॥

अर्थात् उनका रोना सुनकर मोरों ने नाचना बन्द कर दिया, वृक्ष अश्रुधारा के रूप में अपने फूलों को गिराने लगे और हरिणियों ने मुख में भरी घास का कौर गिरा दिया। सीता जी के दुःख की संवेदना से सारा बन ही रोने लगा। इससे अधिक कवि किन शब्दों में करुणा की उद्भावना कर सकता था। इस संक्षिप्त वर्णन में नेत्रों से अश्रुधार भले ही न बहे पर हृदय अवश्य ही करुणा से गद्‌गद् हो उठता है। इस प्रकार हम देखते हैं कि कालिदास ने केवल विप्रलम्भ शृङ्गार के अङ्ग के रूप में ही नहीं बल्कि स्वतंत्र रूप से भी करुण रस का आस्वादन कराने में प्रशंसनीय सफलता प्राप्त की है। कहीं कहीं अधिक विस्तृत वर्णन में न जाकर संकेत मात्र से ही उसे दर्शाने की चेष्टा की है। भगवान् राम के 'महाप्रयाण' के समय उनके पीछे पीछे चलने वाली जनता के आंसुओं से समस्त मार्ग को गीला करवाकर इसी संकेतात्मक शैली से काम लिया है (१५.९९)

वास्तव में संस्कृत साहित्य का कोई भी ऐसा क्षेत्र नहीं जिसमें कि कालिदास ने अपनी नैसर्गिक प्रतिभा के बल पर किसी रस को पुष्टि की चरमावस्था तक न पहुंचा दिया हो। उनकी दृष्टि जिस ओर उठती है उसी ओर अलौकिक रस धार बहा डालती है। शाकुन्तल के चतुर्थ अंक में उनका करुण रस इस उच्च भूमि को प्राप्त हो गया है कि वहां जड़ और चेतन का भेद ही मिट गया है। इस जड़ और चेतन के अपूर्व मिलन को देख कर ही किसी भावविभोर आलोचक ने निचोड़ रूप में कह दिया—



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कालिदासस्य सर्वस्वमभिज्ञानशकुन्तलम् ।
तत्रापि च चतुर्थोऽङ्कस्तत्र श्लोकचतुष्टयम् ।।

वह 'सर्वस्व' क्या है यह किसी भी पाठक से छिपा नहीं। स्पष्ट ही आज से शताब्दियों पूर्ण के समालोचक ने उच्च स्वर से महाकवि के 'करुण' रस के महत्त्व को श्रेष्ठ स्वीकार किया था। शकुन्तला की विदाई का दृश्य निःसन्देह करुण रस का ऐसा चित्र है जैसा कि सम्पूर्ण संस्कृत साहित्य में ढूढने पर भी न मिलेगा। यही तो इस विश्वविख्यात नाटक की आत्मा है, निसर्ग-कन्या शकुन्तला पतिगृह को जानेवाली है। उसके बचपन की स्मृतियों को अपने धूलिकणों में छिपानेवाला आश्रम, वृद्ध पिता कण्व, बालसंगिनीप्रिय सखियां, उसके ही हाथों से पाली हुई बन-ज्योत्स्ना, अनाथ मृग छौना एवं आश्रम के अन्य-पशुपक्षी जितने भी आज तक उसके संपर्क में आए वह उन सबसे नाता तोड़कर जा रही है। जड़, चेतन सबके साथ उसका ऐसा सौहार्द हो गया है कि उसके विदाई का समय आते ही सभी व्याकुल हो उठते हैं। भला क्यों न हों वे व्यग्र! उसका नैसर्गिक स्नेह सबमें अनुप्राणित हो चुका है। कण्व ऋषि के आश्रम का कण कण दुःखी है, यहां तक कि संसार से विरक्त महर्षि की दशा देखिए। वे कहते हैं—'आज शकुन्तला चली जाएगी, यह विचार आते ही मेरा हृदय बैठा जा रहा है। आंसुओं के रोकने से गला इतना रुंध गया है कि मुख से शब्द भी नहीं निकलते, और इसी चिन्ता से नेत्रों से कुछ दिखाई भी नहीं पड़ता। जब मेरे जैसे बनवासी को पुत्री की विदाई पर इतनी व्यथा हो रही है तो भला उन बेचारे गृहस्थियों को कितना दुःख होता होगा जब कि वे अपनी पुत्री को पहले पहल विदा करते होंगे। इसके बाद महर्षि स्वयं ही प्रकृति से शकुन्तला की विदाई के लिये अनुमति मांग रहे हैं। "पातुं न प्रथमं०" हे तपोवन वृक्षों! तुम्हारी प्यारी शकुन्तला आज पतिगृह को जा रही है, तुम सब उसे जाने की अनुमति दो'। कण्व की इस वाष्परुद्ध कण्ठ की वाणी को सुनकर स्वीकृति स्वरुप व्याकुल कोयल कूक उठती है। समस्त आश्रम करुणा की छाया से अच्छादित हो जाता है।

महर्षिका वात्सल्यस्नेह बार बार उमड़ रहा है। उसकी कल्याणमय यात्रा के लिये शुभ कामना करते हैं। बन देवियां उसे अखंड सौभाग्य का आशीर्वाद देती हैं और उसके श्रृंङ्गार के लिये सुन्दर वस्त्रभूषण भेंट करती हैं। इस प्रकार वियोग की लहर थोड़े से समय में ही समस्त तपोवन को आप्लावित कर लेती है। शकुन्तला की विदाई की सूचना पाते ही हरिणियां मुख में चबाए हुए घास के कौरों को भी उगल देती हैं, मोरो ने नाचना छोड़ दिया है और लताओं के पीले पीले पत्ते इस प्रकार झड़ रहे हैं मानो उनके आंसू गिर रहे हैं। थोड़ी ही दूर आगे बढ़ती है तो उसे अपनी बहन के समान प्यारी वनज्योत्स्ता की याद आ जाती है। और उसे देखते ही वह उसे गले लगा कर प्यार करती है। यह एक अद्भुत ही स्नेह बन्धन का दृश्य है। अनाथ मृगछौना, जिसे उसने मां की तरह पाला पोसा था उसे जाते देख आखों में आंसू डबडबाए चुपचाप उसके पीछे चलने लगता है। कितनी वेदना बरसती है उस मृग छौने की भोली आखों से जिसने कि मातृ विहीन होने पर भी शकुन्तला के हाथों मां के प्यार की अनुभूति की थी। बाल सहचरी अनुसूया और प्रियंवदा का शोक तो अनुमानगम्य ही है।

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इस अंक में अचेतन प्रकृति को भी रुला देनेवाली करुणा वास्तव में करुणा है, वह महाकवि की करुण व्यञ्जना का ज्वलन्त उदाहरण है, उत्तर राम चरित में तो "अपि ग्रावा रोदित्यापि दलति वज्रस्य हृदयम्" के द्वारा पत्थरों के रोने का संकेत ही मिलता है किन्तु शाकुन्तल में प्रत्यक्ष ही सचराचर जगत शकुन्तला की विदाई पर रोता हुआ दिखाई देता है। श्री उपाध्याय जी के शब्दों में—अन्तः करण की करुण दशा को व्यक्त करने वाली प्रकृति की यह मूक वाणी सच्चे हृदय के अतिरिक्त किसे सुनाई पड़ती है। प्रकृति में मानव बियोग का यह आन्दोलन विना किसी मार्मिक कवि के अन्तश्चक्षु के किन नेत्रों से प्रत्यक्ष किया जा सकता है; मनुष्य तथा प्रकृत का यह दर्शनीय वियोग किस रसिक की हृदय तंत्री को निनादित नहीं करता ?" करुणा की दृष्टि से 'शकुन्तला प्रत्याख्यान' का दृश्य भी कम द्रावक नहीं। प्रकृति के निश्छल वातावरण के बीच पली हुई शकुन्तला के प्रति हमारी कितनी सहानुभूति हो जाती है जब कि हम उनकी बड़ी बड़ी अभिलाषाओं पर तुषारपात होते हुए देखते हैं। ऐसे समय में क़ौन ऐसा हृदय हीन होगा जो कि रो न उठेगा।

उनका 'मेघदूत' भी करुणा के वातावरण से खाली नहीं। इसमें कालिदास ने मानव हृदय के सुक्ष्म से सूक्ष्म और कोमल से कोमल भावों को स्पन्दित करने में अभूत पूर्व सफलता प्राप्त की है। मेघदूत का प्रथम श्लोक ही हृदय में करुणा का स्रोत प्रवाहित करने लगता है। उस विरही यक्ष के साथ कवि की इतनी सहानुभूत है कि वह उसका परिचय देता है 'कश्चित्' (कोई बेचारा) कह कर। वह वास्तव में करुणा का पात्र है। उसे वियोग की इतनी वेचैनी है कि वह थोड़े दिनों के लिये एक आश्रम पर टिक ही नहीं सकता। 'रामगिर्याश्रमेषु' कह कर। कवि ने यही व्यञ्जित किया है कि उसका मन उसे एक स्थान पर चैन से बैठने ही नहीं देता था और वह आश्रम से आश्रम पर भटकता फिरता था। अग्नि, जल, वायु और धुएं के मेल से बना हुआ बादल भी जब उसकी मर्मस्पर्शिनी वेदना को सुनकर द्रवित हो उठता है और उसके कष्ट को दूर करने के लिये प्रयत्नशील हो जाता है तो करुणासागर कालिदास का तो कहना ही क्या। जरा उसकी दयनीय दशा का हाल तो देखिए। वह कहता है:—

मामाकाशप्रणिहितभुजं निर्दयाश्लेषहेतो
लंब्धायास्ते कथमपि मया स्वप्नसंदर्शनेषु।
पश्यन्तीनां न खलु बहुशो न स्थली देवतानां
मुक्तास्थूलासमकिसलयेष्वश्रुलेशाः पतन्ति ॥

(हे मेघ तुम मेरी प्रेयसी से कहना—जब कभी मैं स्वप्न में तुम्हें देखकर गाढ़ आलिङ्गन के लिये ऊपर भुजाएँ फैलाता हूँ तो उस समय बन के देवता भी मेरे इस उन्मादपूर्ण अभिनय पर तरस खाकर मोती के समान बड़े बड़े आँसू वृक्षों के कोमल पत्रों पर ढुलकाया करते हैं। क्या यह चित्र भवभूति के "अपिग्रावा" की तुलना पर नहीं रखा जा सकता। मेरा तो विश्वास है कि यदि यह उससे श्रेष्ठ नहीं तो किसी रूप में निम्न भी नहीं। इसी प्रकार उसकी विरह विधुरा यक्षिणी भी तो "करुणस्य मूर्तिरथवा शरीरिणी विरहव्यथा" के ही रूप में हमारे सामाने आती है। संक्षेप में यही कहना पर्याप्त होगा कि सम्पूर्ण मेघदूत

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करुणा के मूलाधार पर टिका हुआ है। यही करुणा है जो कि मेघ के पाठक के मन को मुग्ध कर डालती है।

अब एक विचारणीय प्रश्न यह उठता है कि कालिदास में इतना अधिक तथा उच्च कोटि का करुणरस विद्यमान होते हुए भी इसके आचार्यत्व का श्रेय भवभूति को ही क्यों मिला ? इसका एक कारण तो यह हो सकता कि कवि ने अधिकतर इसको स्वतंत्र रूप में न लेकर विप्रलम्भ का पोषक बनाया है। तथा दूसरा यह भी हो सकता है कि यह कालिदास का 'श्रेष्ठतम' न होकर 'श्रेष्ठतर' रस है। अन्यों की तुलना में श्रेष्ठ रहने पर भी अपनी तुलना में पीछे रह जाता है। जो भी हो कम से कम इतना तो अवश्य है कि यदि पक्षपात रहित दृष्टि से देखें तो हम देखेंगे कि करुण रस की व्यंजना में कालिदास भी उतने ही सफल हुए हैं जितने कि भवभूति। दोनों में जो अन्तर दिखाई देता है यह केवल उनकी शैली का है। कालिदास ने व्यञ्जना प्रणाली से थोड़े से चुने हुए शब्दों द्वारा अधिकाअधिक भावों को व्यञ्जित करने की चेष्टा की है और भवभूति ने विपुल वाग्विस्तार के साथ वाच्यार्थ-प्रधान प्रणाली को अपनाया है। दोनों में से किसी को छोटा बड़ा नहीं कहा जा सकता। हृदय के कोमल मनोवेगों को तरङ्गित करने में दोनों में से कोई भी किसी से कम नहीं। कालिदास के करुण रस का आस्वादन करने के लिये लेख में संकेतित प्रकरणों का सङ्गोपाङ्ग अध्ययन विशेष सहायक होगा। सहृदय पाठक स्वयं ही निर्णय दे सकेंगे। कि वास्तव में कालिदास की करुणा कितनी पवित्र और उच्च भूमि पर स्थिति है।

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# आंध्र वाङ्मय का काल-विभाजन

## वेंकट सुब्बाराव धवल

वैज्ञानिक युग के प्रभाव के कारण ही, शायद, आज विद्वज्जन भारतीय भाषाओं के साहित्य-इतिहासों को अवैज्ञानिक सिद्ध करते हैं। आन्ध्र वाङमय का इतिहास भी इससे बच नहीं पाया है। लेकिन जिस प्रकार प्रान्तीय साहित्यों के इतिहास-ग्रन्थ विद्वानों में मतभेद होते हुए भी, आज लिखे और माने जा रहे हैं, उसी प्रकार आन्ध्र वाङमय के इतिहास को अवैज्ञानिक होने पर भी मान्यता देनी पड़ती है। आन्ध्र वाङमय के इतिहास-काल विभाजन को जानने के पूर्व आन्ध्र भाषा और वाङमय सम्बन्धी कुछ निम्नलिखित पारिभाषिक शब्दों से परिचित होना अत्यन्त आवश्यक है।

तेनुंगु, तेलुंगु :—श्रीशैल, महेन्द्र गिरि और विन्ध्यपर्वत नामक तीन पर्वतों या नगों से आवृत होने से आन्ध्र देश तेनुंगु देश कहलाता है और आन्ध्र प्रान्त के उत्तर, पश्चिम और दक्षिण सीमाओं पर द्राक्षाराम, श्रीशैल और कालहस्ति नामक तीन पुण्य क्षेत्र (तीर्थ स्थान) हैं। इन तीनों स्थानों में तीन देवता-लिंग हैं। वे क्रमश: भीमेश्वर, मल्लिकार्जुन और कालहस्तीश्वर कहलाते हैं। इस प्रकार तीन लिंगों से आवृत देश होने से यह त्रिलिंग देश भी कहलाता है। त्रिलिंग से तेलुंगु और त्रिनग से तेनुंगु शब्द बनते हैं। कुछ विद्वान तेनूंगु की उत्पत्ति तेने अगु (मधुर भाषा) से और तेलुगु की तेलि-तेलियु (जानना) धातु से मानते हैं। तेलंगाणा, तैलंग, तैंलंगा आदि अपभ्रंश रूप हैं। पहले ये सब शब्द देशसूचक ही थे, बाद में भाषा सूचक और बहुवचन प्रयोग से, अर्थात्, अन्त में 'लु' जोड़ने से उस देश के निवासियों का भी अर्थ बोध करने लगे। आन्ध्र भी उनका समानार्थक है।

**प्राचीनता और उपभाषाएँ :**—आन्ध्र शब्द महाभारत और ऐतरेय ब्राह्मण काल में भी मिलता है। उस समय आन्ध्र शब्द का अर्थ देश ही तक सीमित था, भाषा का बोधक नहीं था। उत्तर भारत के स्वयंवरों और राज कार्यों में अन्यों की तरह आन्ध्र देश के लोग भी भाग लेते आ रहे थे। इसके प्रचुर प्रमाण संस्कृत वाङमय में अनेक मिलते हैं। इसके बाद अपभ्रंश काल में आन्ध्र शब्द के स्थान पर त्रिनग या त्रिलिंग के अपभ्रंश रूप ही प्रयोग करते पाये जाते हैं। हिन्दी साहित्य के आदि काल के मैथिली कोकिल विद्यापति ने (१४ वीं सदी) सब जन मिट्ठा देसिल् वयना में जौनपुर का वर्णन कीर्तिलता के द्वितीय पल्लव में करते हुए आन्ध्र राजाओं को इस प्रकार सम्मिलित किया है—

तेलंगा बंगा चोल कलिंगा रावापुत्ते मण्डीआ।······निअ भासा जम्पइ·········आदि।

दक्षिणापथ के कुछ विद्वानों का मत है कि पाँचवीं सदी के पूर्वार्द्ध में ही तेलंगाणा से आन्ध्र अलग हुआ था। लेकिन इतिहासकारों का मत है कि चन्द्रगुप्त मौर्य के समय दोनों अलग हुए थे और चालुक्य वंश के राजाओं द्वारा प्राकृतमय तेलुंगु राजभाषा बनाई गई थी।

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उप-भाषा के सम्बन्ध में भी विद्वानों में एक मत नहीं है। कुछ विद्वानों का मत है कि ऐतरेय ब्रह्मण काल में कुछ जातियाँ आकर आज के (गंजाम्—उड़ीसा प्रान्त में पड़ता है) और विशाखपट्टनम् जिलों के पहाड़ी इलाकों में बस गयी थीं। इसके अतिरिक्त कोंड, चंचु, सबर, गदब आदि जातियाँ भद्राचलम्, श्रिकाकुलम् और हैदराबाद आदि के पहाड़ी और जंगली इलाकों में आज भी हैं। आदि द्रविड़, आदि आन्ध्र सूचक जातियाँ आज भी आन्ध्र में हैं। सब अपभ्रष्ट या तेलंगु के प्राचीन रूप ही बोलते हैं। अतः उपर्युक्त दोनों के आधार पर कुछ विद्वान उनकी भाषा को तेलुंगु के प्राचीन रूप या उप-बोलियों के अन्तर्गत मानने के पक्ष में हैं। श्री लिंगम लक्ष्मा जी ने उनका व्याकरण और लिपि बनाई। लेकिन कुछ विद्वान तमिल के प्राचीन रूपों से और कुछ प्राकृत और अपभ्रंश भाषाओं से तेलुंगु के प्रारूप मिलाते हैं। बड़ग, कुरुंब, गोलटी, तुलु तोड़ा, आदि बोलियों सहित कन्नड भाषा को (हल कन्नड) अच्च तेलुंगु प्राचीन तेलुंगु की उप-भाषाओं के अन्तर्गत लाना चाहते हैं। इसका प्रमाण कन्नड़ भाषा की अलग लिपि, तमिल मलयालम् की तरह न होकर लिंग, वचन, कारक, वाक्य रचना, छन्द, उच्चारण आदि में अन्यों की अपेक्षा तेलुंगु से कन्नड की अधिक सारूप्यता ही है। अच्च तेलुंगु से हल कन्नड़ अलग होकर तेलुंगु से लिपि और अन्य अनेक विशेषताओं को लेकर और संस्कृत से भाषा साहित्यों को लेकर नव कन्नड भाषा हल कन्नड़ भाषा से अलग हुई, और समृद्ध होती जा रही है। एक प्रकार से अनेक उप-भाषाएं तेलुंगु के अन्तर्गत हैं और दूसरी तरफ एक भी उप-भाषा तेलुंगु की नहीं है। किन्तु माण्डलिक भेद अनेक हैं।

**भाषा भेद**—श्री वागनुशासन नन्नय द्वारा अपने 'आन्ध्र शब्द चिन्तामणि' में तेलुंगु के चार भेद स्पष्ट किए गए हैं। वे तद्भव (तज्जा) तत्सम (समा), देश्या और ग्राम्य इस प्रकार हैं—प्रकृति द्वयजा तज्जा, तुल्यातुसमा, प्रवाहिनी देश्या, अनियमात् ग्राम्यम् हि यत्वपभ्रंशः। आचार्य अधर्वग ने अन्य देशी भेद भी माना है।

आन्ध्र के विद्वान अपने साहित्य-इतिहास को आन्ध्र वाङमय चरित्र कहते हैं। अतः मेंने भी उनके प्रिय शब्दों का प्रयोग करते हुए उसके काल-विभाजन के पक्ष-विपक्षों को निष्पक्ष से लिखा है।

समाज और साहित्य की गति-विधि को पहिचान कर साहित्यिक प्रवृत्तियों के रहस्यों का उद्घाटन करते हुए अपने इतिहास को एक पूर्व निर्धारित कसौटी पर परखने की शास्त्रीय पद्धति आचार्य डा० हजारी प्रसाद द्विवेदी आदि हिन्दी साहित्य के इतिहासकारों की एक विशेष देन है। इस प्रकार का प्रयत्न अन्य साहित्य के इतिहासकारों ने नहीं किया है। इस शास्त्रीय पद्धति को छोड़कर शेष सभी विशेषताएँ आन्ध्र वाङमय के प्रथम इतिहासकार श्री कन्दुकूरि वीरेश लिंगम जी पन्तुलु में पायी जाती हैं। उनका "आन्ध्र कवुल चरित्र" अर्थात् "आन्ध्र कवि जीवन वृत्त" आन्ध्र वाङमय में हर साहित्यिक दृष्टि से एक विशेष स्थान रखता है। उन्होंने आन्ध्र कवियों को प्राचीन कवुलु, मध्ययुगीन कवुलु, आधुनिक कवुलु तीन वर्गों में बाँटा है। यह ग्रन्थ तीन भागों में लिखा गया है। इसमें काल-क्रम के अनुसार कवियों को लेकर उनके जीवन-वृत्त, कृतियों, संकलित या अनूदित ग्रन्थ, साहित्यिक विशेषताएँ और ग्रन्थ-समर्पण प्राप्त राजा आदि को आचार्य रामचन्द्र जी शुक्ल की तरह

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विवेचन करके दिया है। उनके इस भगीरथ प्रयत्न के ठोस आधार और प्रमाण कवियों के आश्रयदाता, दरबारी चिट्ठे, शिलालेख, दानपत्र, समकालिक कवियों के उद्धरण और अन्य साहित्यिक रचनाएँ हैं। इन्हीं सबके आधार पर श्री कन्दुकूरि वीरेश लिंगम जी पन्तुलु ने कवियों का काल-निर्णय किया है।

लेकिन कुछ विद्वान इनके आन्ध्र कवुलु चरित्र को कविजनों का जीवन-वृत्त कहकर इतिहास की कोटि से उसी प्रकार अलग रखना चाहते हैं जिस प्रकार आचार्य शुक्ल ने पूर्ववर्ती फ्रांसीसी इतिहासकार गार्सा द तासी से लेकर मिश्र-बन्धुओं तक का इतिहास कार्य हिन्दी साहित्य में कविवृत्त संग्रह ही कहकर इतिहास की कोटि से हटा दिया है; लेकिन इतने प्रबल प्रमाण आन्ध्र वाङमय में उनके परवर्ती आचार्यों के पास नहीं हैं।

दूसरी बात यह है हिन्दी साहित्य का इतिहास हिन्दी शब्द सागर की भूमिका के रूप में असम्पूर्ण होने से समय-समय पर परिष्कृत और परिवर्द्धित किया गया है। इस प्रकार का परिष्कार और परिवर्द्धन अन्यों की तरह आन्ध्र वाङमय इतिहास ग्रन्थों में भी नहीं हुआ है।

इसके बाद दूसरा नाम "कवि जीवतमुलु" अर्थात् कविजीवन के रचयिता श्री गुरुजाड श्रीराममूर्ति जी पंन्तुलु का आता है। हिन्दी साहित्य इतिहास की तरह आन्ध्र वाङमय चरित्र भी कवि-जीवन-वृत्तों से ही विकसित हुआ है। आपने महाभारत के रचयिताओं या अनुवादकों को भारत कवि, आन्ध्र रामायणों के रचयिताओं को रामायण कवि और प्रबन्ध रचयिताओं को प्रबन्ध-कवि कहकर कवियों को तीन वर्गों में बाँटा है।

इनके वर्गीकरण पर कुछ विद्वानों का आक्षेप है कि यह इतिहास ग्रन्थ नहीं हो सकता। कारण कि उनका वर्गीकरण का आधार वैज्ञानिक तो है नहीं, साथ ही कवियों के समय का भी ध्यान नहीं रखा गया है। यद्यपि उनके समय तक आन्ध्र में भारतों की रचना होते समय कोई रामायण का रचयिता नहीं हुआ हो और रामायणों के समय में प्रबन्ध कवि भी अपवाद से हुए हों, तथापि ग्रन्थों की विषय-वस्तु के आधार पर कवियों की सूची बनाने को यह कोई पुस्तकालय की आलमाइरी नहीं है!

अस्तु; इसके बाद अनेक विद्वानों ने आन्ध्र वाङमय का युग विभाजन अपनी अपनी दृष्टि से किया है। सर्वश्रीचिलुकूरि नारायण राव जी, चिलुकूरि वीरभद्रराव जी, नागेश्वर राव जी, के सीतारामय्या जी, लक्ष्मीरंजनम् जी आदि आन्ध्र वाङमय के युग-विभाजन में कर्णधारों की तरह माने जा रहे हैं। मान्यवर गन्टिजोगि सोमयाजुलु जी ने अपने 'आन्ध्र भाषा विकास' में प्राचीन युगों के ऊपर भी बहुत प्रकाश डाला है।

कुछ विद्वान नन्नय युग, तिक्कन युग, एईन युग, श्री नाथ युग, श्री कृष्णदेवरायलु युग, क्षीण युग, आधुनिक युग नामक आठ युगों में आन्ध्र वाङमय को बाँटते हैं। श्री काशीनाथ नागेश्वर राव जी इसके कर्णधार हैं। कुछ लोगों ने आन्ध्र देश के इतिहास के काल-

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विभाजन ही को कुछ हेरफेर करके वाङमय-युग-विभाजन के नाम से घोषित कर दिया है। वे इस प्रकार हैं :—

आन्ध्र वाङमय का युग-विभाजन ईस्वी युग के अनुसार किया गया है। मैंने ५७ जोड़कर संवत् बनाया है।

| | | |
|---|---|---|
| १—अज्ञात युग पूर्वार्ध | | ५५७ तक |
| ,, ,, उत्तरार्ध | ५५७ से | १०५७ तक |
| २—पौराणिक युग | १०५७ से | १२५७ तक |
| ३—काकतीय युग | १२५७ से | १४३७ तक |
| ४—कर्नाटक युग प्रवन्ध युग | १४३७ से | १५५७ तक |
| ५—कृष्णदेवरायलु युग | १५५७ से | १७०७ तक |
| ६—मध्य युग | १७०७ से | १८५७ तक |
| ७—संधियुग या नवयुग | १८५७ से | १९५७ तक |
| ८—आधुनिक काल | १९५७ से | ——— |

यह आन्ध्र वाङमय का युग विभाजन नहीं हो सकता। इसमें काकतीय आदि राजवंशों के आधार पर देशी इतिहास का काल विभाजन किया गया है। अतः इसमें कुछ भी साहित्यिक प्रवृत्तियों का ध्यान नहीं किया गया है। इसलिये साहित्यिक धाराएँ अति व्याप्ति और अव्याति दोषों से ग्रस्त हैं। इनकी बाकी विशेषताओं को श्री कोराड रामकृष्णय्या जी के और अन्यों के काल विभाजन से जाना जा सकता है।

अस्तु, पूर्ववर्ती सभी विद्वानों से असन्तुष्ट होकर श्री कोराड रामकृष्णय्या जी ने अपनी रुचि के अनुसार आन्ध्र वाङमय चरित्र को छ युगों में बाँटा है, जो इस प्रकार हैं—

| | | |
|---|---|---|
| १—अज्ञात युग या प्राङनन्नपार्य युग | | सं० १०५७ तक |
| २—भाषान्तरीकरण युग या कवित्रय युग | १०५७ से | १४०७ तक |
| ३—संधियुग या श्रीनाथ युग | १४०७ से | १५५७ तक |
| ४—प्रबन्ध युग या रायलु युग | १५५७ से | १७५७ तक |
| ५—संधियुग या दक्षिण देशीय वाङम युग | १७५७ से | १९५७ तक |
| ६—आधुनिक युग | १९५७ से | ——— |

उपर्युक्त छ युगों में प्रथम अज्ञात युग है और इस नामकरण के अज्ञात शब्द से ही अर्थ स्पष्ट हो रहा है। आप के मत से कोई विशेष साहित्यिक रचनाओं के न मिलने से ही इसका नाम अज्ञात युग रखना उचित है।

दूसरा भाषान्तरीकरण युग या कवित्रय युग संवत् १०५७ से १४०७ तक माना जाता है। इसे कुछ विद्वानों ने पौराणिक युग भी कहा है। यहाँ पौराणिक शब्द का अर्थ पुराणों से सम्बन्धित है न कि प्राचीनता का सूचक। इसे भाषान्तरीकरण युग कहने का कारण है कि इसमें महाभारत आदि ग्रन्थों का अनुवाद मात्र होकर किसी मौलिक ग्रन्थ की रचना का नहीं होना ही है। इस युग के प्रवर्तक और आन्ध्र महाभारत के रचयिता तीन कवि-

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आदि कवि नन्नय, कवि ब्रह्म तिक्कन, प्रबन्ध-परमेश्वर एर्राप्रगड–हुए हैं। अतः आन्ध्र के अधिक विद्वान अलग-अलग तीन युग न चलाकर तीनों का सम्मिलित एक युग चलाने के पक्ष में हैं। इसलिये यह कवित्रय युग कहलाता है।

आपने तीसरे युग का नाम संधि युग या श्रीनाथ युग रखा है। इसका समय सं० १४०७ से १५५७ तक माना जाता है। गत भाषान्तरीकरण युग और भविष्य के प्रबन्ध युग के बीच के समय को संधियुग मानना आप उचित समझते हैं। जिस प्रकार आंग्ल भाषा के साहित्य-इतिहास में चार्ल्स, टेनिसन्, शेक्सपियर आदि के नाम से युगों का नामकरण हुआ है, उसी प्रकार श्रीकोराड रामकृष्णय्या जी कवि-सार्वभौम श्रीनाथ के नाम से इस युग को चलाना चाहते हैं।

चौथा युग प्रबन्ध युग है। यह संवत् १५५७ से १७५७ तक माना गया है। कारण कि इस युग के आन्ध्र वाङमय की श्रीवृद्धि हंपी विजयनगरम् के राजा श्री कृष्ण देवरायलु द्वारा हुई है। रायलु का युग साहित्य और राजनीति का स्वर्ण युग है। भारतीय इतिहास के भक्तिकाल का स्वर्णयुग आन्ध्रवाङमय के उस रायलु के स्वर्ण युग में आ जाता है। भक्तिकाल के अष्ट-छाप की तरह इस युग में भी आठ महाकवि हुए हैं। वे 'अष्टदिग्गज' के नाम से आन्ध्र वाङमय में प्रसिद्ध हैं। अष्ट छाप भक्तिकाल के स्वर्ण युग में होकर पुष्टिमार्गीय वैष्णव भक्ति सम्प्रदाय से अनुप्राणित है और आन्ध्रवाङमय के अष्टदिग्गज रायलु के स्वर्णयुग में राजपोषित महाकबि हैं। इस प्रकार अष्टछाप या अष्टदिग्गज तेलुगु और हिन्दी साहित्य के स्वर्णयुगों ही में हुए। तामिल या कन्नड़ आदि अन्य प्रान्तीय साहित्यों के स्वर्णयुगों में या कम से कम अन्य युगों में भी नहीं हुए हैं। उसी समय रायलु ने यह घोषित किया कि देशभाषालन्दु तेलुंगु लेस्स, अर्थात् आधुनिक भारतीय भाषाओं में तेलुंगु सर्वोपरि है। अतः आज भी यह सत्य प्रतीत होता है। अस्तु, बीरार, बीदर, बीजापुर, गोलकोडा ओर अहमद नगर के आक्रमण के बाद भी उस स्वर्णयुग के खण्डहर और साहित्यिक कृतियाँ अवशेष हैं। आज वे खण्डहर ही बताते हैं कि उस युग के साहित्य की इमारत कितनी बुलन्द थी,।

श्री कोराडा जी का पाँचवाँ युग पुनः एक संधियुग आता है। इसका समय संवत् १७५७ से १९५७ तक माना जाता है। उनके अनुसार यह आवश्यक इसलिये है कि उन दो शताब्दियों में दक्षिण देश अर्थात् मदुरा, तेंजूर आदि से कुछ साहित्यिक धाराओं ने आन्ध्र वाङमय पर प्रभाव डाली हैं। इसलिये इसे दक्षिण देशीय वाङमय युग कहना आप उचित समझते हैं। दूसरी बात है कि इस समय आधुनिक युग के कुछ नये लक्षणों का आभास मिलने से इसे संधियुग भी कहा गया युग है।

श्री कोराड़ा जी का षष्ट युग आधुनिक है। यह संवत् १९५७ से प्रारंभ होता है। यह काल उनके वर्गीकरण का अन्तिम युग है। इस प्रकार उनके आन्ध्र वाङमय में छ युग हैं।

श्री कोराड रामकृष्णय्य जी और उनके पूर्ववर्ती आचार्यों के आन्ध्र वांङमय युग विभाजन पर कुछ विद्वानों की आपत्तियाँ इस प्रकार हैं।


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श्री कोराड़ा जी ने अपनी रुचि के अनुसार आन्ध्र वाङमय को छ युगों में बाँटा है। अन्य विद्वानों ने साहित्यिक प्रवृत्तियों को न पहचान कर राजाओं, राजवंशों, भाषा-भेदों, ऐतिहासिक युगों आदि के आधार पर साहित्य के युगों का विभाजन किया है। अतः इन वर्गीकरणों का कोई अकाटच प्रमाण या वैज्ञानिक आधार नहीं है। बहुत से विद्वानों ने अपने विभाजन के एक युग का दो-दो नाम रखा है। इससे उनके अन्दर ही स्वयं एक द्वन्द्व उत्पन्न हो गया, अन्यों की आलोचना के बारे में क्या कहना है। श्री कोराडा जी ने आन्ध्र वांङमय को एक महासौध का रूपक वाँधा है। उसके मंजिल, सोपान मार्ग, कमरों की नक्कशी आदि सुन्दर, प्रांजल और मनोहर भाषा में वर्णित हैं। यह वर्णन भावुकता का पूर्ण परिचय देता है। अयोध्या के रूपक बाँधने से तुलसी बाबा की शोभा अवश्य बढ़ जाती है, लेकिन किसी साहित्यकार के युग-विभाजन का प्रमाण या तर्क यह रूपक नहीं हो सकता।

उनके युग-विभाजन का दूसरा, चौथा और छठा युग वाङमय सौंध के तीन मंजिल माने गए हैं। तीन मंजिलों के बीच में दो सोपान मार्ग अनिवार्य संधियुग कहा गया है। उस सौंध की नींव एक अज्ञात युग है। इस प्रकार कुल छ युग हुए हैं। वे एक जगह कहते हैं कि उनका यह महासौंध संस्कृत के समतल पर ही खड़ा है और दूसरी जगह लिखते हैं कि अज्ञात युग पूरा उसकी नींव है। अगर किसी धरातल पर एक झोपड़ी को खड़ा कर दिया जाय तब क्या पृथ्वी के ७९१३ मील व्यास को उस झोपड़ी की नींव कहने मात्र से हवा की झोंका से उसे गिरने से रोका जा सकता है? दूसरी बात है कि अगर एक लिफ्ट पर बैठकर उनके महासौध की छत पर जाया जाय तो उनके सोपान-मार्गों की अनिवार्यता कहाँ है? क्या पूरा सौध एक ही संधियुग से समाप्त नहीं हो जायगा? कोई तर्क न देकर रूपक पर सौधों को खड़ा करने से यही हालत होती है।

अस्तु, श्री कोराडा जी के छ युगों में पहला अज्ञात युग और अन्तिम आधुनिक युग हैं। ये तो आज के सभी भाषा साहित्य के लिए ग्रन्थों के दो साधारण अनिवार्य युग हैं। हमारे अज्ञान के कारण इतिहास में भी एक अज्ञात युग बना दिया गया है। इसे छोड़कर जहाँ से सामग्री मिलता है वहीं से युगों को आरंभ करने से कुछ कल्पित युग भी कम हो जायेंगे और आरोपित कलंक भी मिट जायगा। अगर साहित्य के आचार्यों द्वारा अज्ञात को भी साहित्य की एक मूल प्रवृत्ति मानी जाय तभी उस अज्ञात युग का नाम ठीक पड़ेगा। दूसरे युग से ही प्रारंभ करके सच्ची बात कहना कोई अपमान नहीं है। संस्कृत प्राकृतों से सम्बन्ध को भूल जाने से ही ऐसा हुआ होगा। आशा है आन्ध्रपरिशोधन विभाग, आन्ध्र विश्व-कलापरिषद् आदि इस अज्ञात युग पर प्रकाश डालेंगे।

दूसरी बात यह है कि अज्ञात युग के अन्त होते ही आदि कवि, आन्ध्र कविता पितामह और वागनशासन कहलाने वाले श्री नन्नय भट्टारक अवतरित हो जाते हैं। श्री नन्नय ने महाभारत के दो पर्व और चार अश्वासों का आन्ध्र पद्यानुवाद किया है। आन्ध्र भाषा का सर्वप्रथम व्याकरण "आन्ध्र शब्द चिन्तामणि" इनकी दूसरी अमूल्य कृति है। यह संस्कृत भाषा में लिखी गयी है। इस प्रकार वाक् का अनुशासन करने से वागनुशासन नन्नय नाम सार्थक

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हुआ। आज भी श्री नन्नय की कृतियाँ और व्याकरण अकाट्य है। इस व्याकरण का अवशिष्ट द्वितीय ग्रन्थ अथर्वणाचार्य का "अथर्वण कारिकावली" है। श्री नन्नय कृत "आन्ध्र शब्दचिन्तामणि" की तेलुंगु में श्री अप्पकवि ने और संस्कृत में श्री अहोबल पति ने व्याख्याएँ की हैं। उन आचार्यों के नाम से ही उन ग्रन्थों के नाम भी पड़े हैं, अर्थात् "अप्पकवीयम्" और "अहोबलपंडितीयम्"। श्री वागनुशासन नन्नय के बाद कविकोकल, उभय-कवि-मित्र कहलानेवाला श्री तिक्कन और प्रबन्ध-परमेश्वर, शंभुदास कहलाने वाला श्री एर्रन साथ ही इस अज्ञात युग के बाद आकर महाभारत के आन्ध्रीकरण को पूर्ण करते हैं। आन्ध्रवाङमय में कवित्रय शब्द से श्री नन्नय, श्री तिक्कन और श्री एर्रन (या एर्राप्रगड) को ही समझना चाहिए। इन्हीं के नाम से कवित्रय युग नाम पड़ा है और महाभारत आदि का आन्ध्रीकरण होने से इसे भाषान्तरी करण युग भी कहा गया है।

क्या अज्ञात युग के अन्त होते ही कोई भाषा-साहित्य महाभारत के जटिल और रहस्यपूर्ण तत्वों को सुन्दर और स्पष्ट अभिव्यक्त करने योग्य हो जायगा? अगर पूर्वपक्षी इससे सहमत हैं तो राष्ट्र भाषा हिन्दी में आंग्ल भाषा के सभी रहस्यों को अभिव्यक्त करने का सामर्थ्य का स्वीकार क्यों नहीं करते? आज की राष्ट्र भाषा कोई अज्ञात युग के बाद ही नहीं आई। अगर अज्ञात युग के बाद के आन्ध्र वाङमय सर्व शास्त्र सम्पूर्ण और पंचम वेद महाभारत के रहस्यों को स्पष्ट अभिव्यक्त करने में समर्थ है, तो स्वतन्त्रता संग्राम के बाद आई हुई यह राष्ट्रभाषा हिन्दी भी आंग्लभाषा का स्थान ले सकती है। यदि पूर्व पक्षी अज्ञात युग के तुरन्त बाद आने वाला किसी वाङमय संस्कृत ग्रन्थों के उन रहस्यों का उद्घाटन नहीं कर सकता तो इस पक्ष में आन्ध्र वाङमय का अज्ञात युग गलत है। यह क्रमिक विकास का बोधक या सूचक नहीं है। महाभारत के रहस्यों की आन्ध्रवाङमय ने स्पष्ट अभिव्यक्ति की है। इसे कोई भी विद्वान अस्वीकार नहीं कर सकते। इस कवित्रय युग का पूर्व युग अज्ञात युग होने से आन्ध्र वाङमय पर एक आरोपित कलंक है। श्री कोराड जी के उन "नन्नय पूर्व आन्ध्रवाङमय स्थिति" की विशेषताओं में जोड़ कर एक क्रमिक विकास को दिखाने से ही यह हट सकता है। यूनानी साहित्यकार अरस्तू और अफलातून के पूर्व ही अज्ञात युग नहीं था। वैदिक वाङमय के पूर्व ही अज्ञात युग नहीं था। पाणिनी एवं पतञ्जलि के पूर्व ही संस्कृत व्याकरण शास्त्र में अज्ञात युग नहीं था। उनके पूर्व १३ वैयाकरण हो चुके थे। उनसे आन्ध्र वाङमय तो प्राचीन नहीं है न? इसमें अज्ञात युग नहीं रख सकते हैं। अतः किसी भी महान् विचारक का प्रादुर्भाव अज्ञात युग में या तुरन्त बाद नहीं हो सकता। विचार तो अवश्य नये होते हैं। अगर इस प्रकार होता है तो उसके पूर्व का युग अज्ञात युग नहीं होगा।

उनका दूसरा युग भाषान्तरीकरण युग या कवित्रय युग कहा गया है। इस युग में महाभारत का अनुवाद होने से और किसी मौलिक गन्थ की रचना न होने के कारण श्री कोराडा जी ने इसे भाषान्तरीकरण युग कहा है। इस प्रकार के अनुवाद उस युग में कम हुए। मध्ययुग में और आज भी अधिक होते आ रहे हैं। उदाहरण देना व्यर्थ है। अतः मध्यकाल और आधुनिक युग को भी भाषान्तरीकरण युग कहना पड़ेगा। इस प्रकार उनके दूसरे युग का एक नाम अतिव्याप्ति दोष से ग्रस्त है। दूसरी

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बात है कि भाषान्तरीकरण युग को मानने पर भी अनुवाद तो कोई साहित्य की प्रवृत्ति नहीं है भले ही कुछ साहित्यिकों की हो। नहीं तो सन् १८८५ से लेकर १९४७ तक का कांग्रेस इतिहास का समय को भाषाण युग कहना पड़ेगा। कारण है कि भारतीयों की अन्त:प्रवृत्ति स्वतन्त्रता प्राप्त करना न होकर बहि प्रवृत्ति भाषण देना ही है। कोई यह मानने की बात नहीं? इसलिए भाषण युग और भाषान्तरीकरण युग नहीं चला सकते हैं; मुख्यतः साहित्य के क्षेत्र में इसका निषेध है।

इस युग का दूसरा नाम कवित्रय युग भी है। कुछ विद्वानों ने तीनों कवियों के नाम पर अलग-अलग युग चलाये हैं। आपने इसे कम से कम एक युग में सम्मिलित कर दिया है। यह अच्छा ही हुआ। इसका उत्तर भी एक वाक्य में स्पष्ट है। किसी भी साहित्यिक प्रवृत्ति के आधार पर, न कि कुछ व्यक्तियों के नाम पर साहित्य का विजाजन होना चाहिए। राजनीतिक युग इस प्रकार चल सकते हैं। इसलिए आचार्य रामचन्द्र शुक्ल ने भारतेन्दु युग न कह कर भारतेन्दु का छाप मात्र कहा है। "भारतेन्दु युग" परवर्ती आचार्यों की देन है। इस कसौटी पर बहुत से युग नहीं उतर सकते हैं। श्रीनाथ युग, रायलु युग आदि नहीं चल सकते हैं। प्रबन्ध युग भी ठीक नहीं है क्योंकि प्रबन्धों की रचना मात्र से एक युग चलायें तो कहानी, नाटक उपन्यास आदि भी युग प्रवर्तक क्यों नहीं होंगे?

उनका पाँचवाँ युग जो संधियुग है, उसे दक्षिण देशीय वाङमय युग कहा गया है। यदि कुछ साहित्यिक धाराओं के बाहर से आने पर उन धाराओं की उत्पत्ति स्थान से उस युग का नाम रखना उचित है तो आधुनिक युग के वादों की बाढ़ पाश्चात्य देशों से आने के कारण आधुनिक युग का नाम पश्चिमी देशीय वाङमय युग रखना पड़ेगा। कुछ लोगों ने इसे क्षीण युग कहा है। उनके मत में पिछली धाराओं का क्षीण होना ही इसका एक मात्र कारण है। आने वाले युग लक्षणों का आभास होने से उसे संधियुग कहा गया है। प्रायः कुछ इतिहासकारों को कुछ नहीं सूझा तो वे १५० या २०० वर्ष के समय का एक संधियुग बनाते हैं। यह खाइयों को भरने का एक तरीका मात्र है। उस समय की अनिर्दिष्ट लोक-प्रवृत्तियों या स्वतोव्याघातों को एक संधियुग मानने लगें तो हिन्दी साहित्य के इतिहास में हर दो कदमों के बीच एक संधियुग खड़ा हो जाता। लेकिन आचार्य डा० हजारी प्रसाद द्विवेदी और आचार्य रामचन्द्र शुक्ल आदि हिन्दी साहित्य के इतिहासकारों की उन अन्तर्वाहिनी साहित्यिक धाराओं की प्रवृत्तियों को पहचानने से ही हिन्दी साहित्य में कोई "क्षीण युग" या "संधियुग" बीच-बीच में नहीं खड़ा हो पाया है। साहित्य के इतिहास के आदि में संधि काल के मानने में डा० रामकुमार वर्मा का तर्क कुछ उचित है, लेकिन बीच-बीच में तीन-तीन संधियुगों को खड़ा करने वाले आन्ध्र वाङमय इतिहासकारों को नहीं उचित है। इस पर आन्ध्र भाषा-वाङमय परिशोधन विभाग और मान्यवर गन्टिजोगि सोमयाजुलु आदि विद्वानों से आशा है कि वे इस युग-विभाजन को वैज्ञानिक बनायेंगे।

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# मानवता के कवि—श्री गुप्त जी

## श्री वासुदेव शरण अग्रवाल

श्रद्धेय श्री मैथिली शरण जी गुप्त भागवतीय मानवतावाद के प्रतीक युग-कवि हैं। अर्वांचीन विचार धारा के अनुसार मानव विश्व का केन्द्र है। व्यक्ति और समाज के कार्य-कलाप मानव के कल्याण के लिए ही होने चाहिए यही इस युग का स्वच्छ आदर्श है। यह दृष्टिकोण तत्काल ही प्रत्येक के लिए मनःपूत हो जाता है। इसे स्वीकार करने के लिए मन जैसे भीतर से उमंगता है। भारतीय संस्कृति में भागवती परम्परा अपना विशेष स्थान रखती है। भागवतों के दृष्टिकोण का सार यही था—

नारायणो नरश्चैव सत्वमेकं द्विधाकृतम्। उद्योग पर्व

अर्थात् एक ही महान् जीवन तत्व समष्टि और व्यष्टि में व्याप्त है। विराट विश्व में उसकी संज्ञा नारायण है। व्यक्त केन्द्र में वही नर है। नर और नारायण दोनों में एक ही शक्ति की धारा है। दोनों अभिन्न हैं। जैसे वृत्त का केन्द्र और उसकी परिधि दोनों एक ही गणितीय तत्व के दो रूप हैं, एक अव्यक्त है दूसरा व्यक्य है। ऐसे ही नारायण का व्यक्त रूप नर है। भागवतों ने स्पष्ट घोषणा की कि नर और नारायण परस्पर सखा हैं—

नारायणं नरसखं शरणं प्रपद्ये। (भागवत ११।७।१८)

नर और नारायणण की मैत्री का क्या अर्थ है, इसका समाधान यही है कि जो एक व्यक्त की शक्ति है उसका स्रोत समष्टि या समाज की शक्ति में है। दोनों में प्रवाह की एक ही धारा है। व्यक्ति समाज का अन्तरंग सखा है। प्राचीन शब्दों में कहें या नये युग की शब्दावली का आश्रय लें बात एक ही है।

नर-नारायण के इस नित्य और अभीष्ट संम्बन्ध का हमारे युग की विचारधारा पर क्या प्रभाव पड़ता है, इस का उत्तर है नर की स्वकेन्द्र में प्रतिष्ठा, उसकी वह चारों ओर छिटकने वाली महिमा जिसका वारापार नहीं है। अतएव नर पूज्य है, अभिवाद्य है। हमारे समस्त मानस संकल्पों का वह मध्यवर्ती विन्दु है। जिस संस्था या योजना के मध्य में नर या मानव लक्ष्य भूत नहीं है वह शून्य है। उसमें शक्ति का दूसरा छोर मानों जुड़ा ही नहीं। अतएव वह एकांगी या अधूरी रहती है। नये युग में विश्व के चिन्तन की हिलोरें उठती है और बारंबार मानव के चरणों का स्पर्श करती है। यही मानव का भव्य स्वरूप आज निखर रहा है। जैसे वेदव्यास ने किसी समय कहा था—

गुह्यं ब्रह्म तदिदं ब्रवीमि नहिं मानुषात् श्रेष्ठतरं हि किंचित्।

अर्थात् ज्ञान का यह रहस्य तुम से कहता हूँ। मानव से बढ़कर मूल्यवान तत्व यहाँ और कुछ नहीं है। यही भागवती दृष्टि का निचोड़ है। इसके अनुसार मानव का जीवन

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सोद्देश्य और व्यक्ति की गरिमा दोनों ही सिद्ध होती है। ऐसा ज्ञात होता है कि अर्वाचीन युग के मानव सम्बन्धी विचार-सूत्र की अभिव्यक्ति ही वर्तमान काव्य की दिशा निर्धारित कर रही है। देश-देश में युग कवि इन आदर्शों की वाङमयी आराधना कर रहे हैं और नए नए शब्दों द्वारा विचार-जगत् में नया आलोक भर रहे हैं। प्रगति विश्व का स्वभाव है। यहाँ निरन्तर आगे बढ़ते ही जाना है। विचार और कर्म दोनों क्षेत्रों में पड़ाव डाल कर बैठ रहना यहाँ न किसी के लिए संभव है न इष्ट अतएव जिनके उदार अन्वेषणशील मन युग के महिमाशाली सत्य को पहचान कर उसे शब्दों में ढालते हैं वे ही युग कवि है। श्री मैथिली शरण जी गुप्त सच्चे अर्थों में युग कवि हैं।

किन्तु उनका मानवतावाद विश्व-शक्ति के साथ जुड़ा हुआ है। उस विराट शक्ति की ही संज्ञा ईश्वर है। वह सक्रिय तत्व अनादि और अनन्त है। अनेक समाज काल के अनन्त घरातल पर प्रकट हो रहे और लीन हो रहे हैं। उन सबके उद्भव और परिवर्तन का जो स्रोत है वह सर्वोपरि अनन्त और अक्षय है। उस ध्रुव तत्व की उपासना के विना अर्थात् उसे प्रत्यक्ष किए बिना मानव के निजी स्वरूप की महिमा सम्भव ही नहीं है। सामाजिक धरातल पर उसे ही हम जीवन का महान् सत्य कहते हैं। प्रतिपल उसी की अभिव्यक्ति का नाम मानवी जीवन है।

गुप्त जी के काव्य के विषय भारतीय संस्कृति की देन हैं। प्राचीन साहित्य के स्रोत उनके काव्यों में अपना प्रवाह उँड़ेल रहे हैं। सत्य और अनृत, तम और ज्योति, देव और असुरों के प्राचीन संघर्षों की कथायें भारतीय काव्य में जैसे पहले उद्भूत हुई थीं वैसे ही आज भी आगे आ रही हैं। यह एक अक्षय विषय है। इसका कभी अन्त नहीं हो सकेगा। हां, इसकी व्याख्याएं नई नई होती रहेंगी। आज भारतीय कवि अपने अपने मानस-भवन में उसी प्राचीन आदर्श की आरती उतार रहे हैं। वही उनकी सरस्वती है। सत्यमेव इस आदर्श लोक के भारत की भारती वही है, अर्थात् अनृत का पराभव और सत्य की विजय।

गुप्त जी के काव्य की मूल प्रेरणा उसी आदर्श लोक से जन्म लेती है। उसमें मनुष्य के कल्याण की प्रतिष्ठा है किन्तु उस कल्याण का जो स्वरूप है वह स्थूल भोगों की आराधना के लिए नहीं। वह तो अनन्त करुणात्मक कर्म, दया संयम, तप, सेवा, परोपकार आदि की उपासना के लिए है जो लोक संवर्धन के मान्य तत्व है। गुप्त जी की विचार धारा में मनुष्य और समाज में संघर्ष नहीं। वहां व्यष्टि और समष्टि दोनों का समन्वय है, अर्थात् नर और नारायण दोनों का शाश्वत सख्य भाव है। राम क्या और किस लिए, यह प्रश्न गुप्त जी के लिए वास्तविक है। अनादि अनन्त देवतत्व या चैतन्य की संज्ञा राम है। वही अव्यक्त है और वही व्यक्त होता है। गोसाईं जी ने भी रामाख्यमीशं हरिं कहते हुए अपनी परिभाषा की व्याख्या की है। किन्तु वह राम अव्यक्त ही रहें तो विश्व के लिए अनबूझ पहेली रहेगी। राम स्वयं अपने व्यक्तित्व को गुणों के सांचे में ढालते है और मानव उन गुणों के प्रभाव को प्रत्यक्ष देखकर आस्थावान बनता है और अपनी पृथिवी को देवों के स्वर्ग से बढ़ कर मानते हुए उसकी वन्दना करता है—

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स्वर्ग से भी आज भूतल बढ़ गया,
भाग्य-भास्कर उदय गिरि पर चढ़ गया।
हो गया निर्गुण सगुण साकार है,
ले लिया अखिलेश ने अवतार है॥

राम चरित की यह सशक्त व्याख्या गुप्त जी के काव्य का प्राणवंत स्वर है। वे अपने राम के लिए महता कंठेन घोषणा करते हैं—

भव में नव वैभव प्राप्त कराने आया,
नर को ईश्वरता प्राप्त कराने आया।
संदेश यहां मैं नहीं स्वर्ग का लाया,
इस भूतल को ही स्वर्ग बनाने आया॥

भूतल या कर्ममयी पृथिवी के साथ अटूट बंधन यही मानव की मर्यादा है। यहीं के दुःख-सुखों की गांठ हमें खोलनी है और धरती के ही सुख से सुखी होना है। कवि का काव्य उस खग कुमार के समान है जो ललित स्वर में गाता हुआ व्योम में ऊपर उठता है किन्तु जिसकी सुरीली तान का लक्ष्य अपना घोंसला ही है, मानों अपनी ही पत्नी और पुत्रों को रिझाना उसके गान की सफलता है। मानव-परायण समक्षवाद गुप्त जी के काव्य की महती रसवत्ता है—

अलक्ष्य की बात अलक्ष्य जाने,
समक्ष को ही हम क्यों न मानें?

उनके काव्य की स्वच्छ सरलता का हेतु यही है कि वे समक्ष या प्रत्यक्ष जीवन के लिए ही अपनी सारी आस्था समर्पित करते हैं और इसी के संस्कार द्वारा एस दूसरे लोक की भावना करते हैं जो आदर्श के रूप में नित्य है और हमारी आशाओं का केन्द्र है।

गुप्त जी के काव्य-मानस की प्रेरणा और प्रवृत्ति का स्त्रोत चतुर्विध है। अतीत संस्कृति और कला का प्रेम उसका एक अंश है। वर्तमान युग के प्रति आस्था और राष्ट्रीयता उसका दूसरा चरण है। समक्ष जीवन और उसके साथ जुड़ा कर्ममय प्रवृत्तिमार्ग या कवि के शब्दों में कहें तो 'गेह-गौरव' वाद उसका तीसरा अंश है। मानव की गरिमा या अनुभव या महिमा के प्रति आस्था और आशा एवं उसी आधार पर मानवतावाद या व्यष्टि का समष्टि में पर्यवसान या भागवती परिभाषा में नर-नारायण का समन्वय, यह दृष्टि कोण उसका चौथा अंश है। इन चारों का जहां सम्मेलन होता है वहीं गुप्त जी के काव्य का प्रतिष्ठा विन्दु है। यह देखकर आश्चर्य होता है कि किस प्रकार नये विचारों का उजला गुप्त जी ने अपने काव्यों के प्राचीन ठाठ में भरा है। उन्होंने न केवल उदात्त अतीत के गीत गाए हैं बरन् वे आगे आने वाले और भी अधिक उदात्त जीवन का उत्कंठित आलिंगन करते हैं—

मैं अतीत ही नहीं भविष्यत् भी हूं आज तुम्हारा।
कर्म के प्रति वे कितने आस्थावान् हैं—
कल तक नाम जपा है हमने आज करेंगे काम। (दिवोदास)

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ऊपर जो आकाश का शून्य वितान है, उस ओर देखने से अब कुछ काम न सरेगा। मेघ जलों की कृपा से नहीं किन्तु पृथिवी पर भरे हुए अगाध जल स्रोतों के उपाय से मानव अपने खेतों को सींच कर आत्म निर्भर बन जाना चाहता है—

ऊपर शून्य तको क्यों, नीचे भरे सिंधु गम्भीर,
करो सींचने का उपाय ही, अक्षय है निज नीर ।।

स्वर्ग के राजा इन्द्र की ओर न देखकर मानव अब अपने ही समीप बहती हुई गंगा की ओर दृष्टि डाल रहा है। अनेक आवश्यकताओं की पूर्ति के लिए वह नये नये आविष्कार कर रहा है। निज कर्तव्य से ही उसे सन्तोष प्राप्त हो रहा है। ये कार्य ही उसके नूतन यज्ञयाग हैं। दूर स्वर्ग के कुछ धुंधले दृश्य देखकर नये युग का मानव अपने समक्ष-जीवन की भव्यता या सौन्दर्य को नहीं खोना चाहता। दिवोदास के ये शब्द नये युग के भालपट्ट पर अंकित उसकी ललाट-लिपि हैं—

रहे सदा सब के समक्ष यह मेरा लेख,
हम न भव्यता भी खो बैठें दूर दिव्य कुछ देख ।।

मानव का भाग्य अब देवों के भाग्य से भी अधिक पल्लवित है। मानव ने इस जीवन को पर्व बना दिया है। दिवोदास का मानव पुरुषार्थ और कर्म सिद्धि का गर्वीला पुतला है। राम के आदर्श से उसका मेल नहीं हुआ। अतएव गर्व से फूल कर वह विनाश के मार्ग पर बढ़ जाता है। सच ही मानव ने अपने पुरुषार्थ की कोई सीमा नहीं मानी। नर आज देवराज पद का अधिकारी बन गया है। पर देवों के स्थूल भोगों के लिए देवों जैसा स्थूल मन भी चाहिए। आसुरी मन से देवधाम की प्राप्ति असम्भव है। नहुष का यही सार्थक संदेश है—

सीमा यही है पुरुषार्थ की पुरुष के ?
मुद्रा हुई उत्सुकसी मुख की नहुष के।
नर अधिकारी आज देवराज पद का,
किं वा वह लक्ष्य हुआ हाय ! सुरपद का।
मानता हूं भूल गया नारद का कहना–
दैत्यों से बचाए निज देवधाम रहना।

किन्तु नहुष का स्वर्ग से पतन मानव की अन्तिम पराजय का सूचक नहीं। उसे भविष्य के लिए सावधान करने का हेतु है। जैसा कवि ने स्वयं कहा है—नहुष के आख्यान में यह स्पष्ट दिखाई दिया कि मनुष्य बार बार ऊँचे उठने का प्रयत्न करता है और मानवीय दुर्बलताएं बार बार उसे नीचे ले आती हैं। मनुष्य को उन पर विजय पानी होगी तब तक जब तक वह पूर्णता प्राप्त न कर ले—

गिरना क्या उसका उठा ही नहीं जो कभी,
मैं ही तो उठा था आप गिरता हूं जो अभी।
फिर भी उठूंगा और बढ़ के रहूंगा मैं
नर हूं पुरुषार्थ हूं मैं चढ़ के रहूंगा मैं ।।

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यद्यपि यह दृढ़ आशावाद और संकल्प मानव के कर्म की टेक है, किन्तु मानव ही मानव है। देवता उसकी सफलता से सिहाते और असफलता पर हंसते हैं, और असुर उसे कभी चैन से नहीं बैठने देते—

देव सदा देव तथा दनुज दनुज हैं,
जा सकते किन्तु दोनों ओर मनुज हैं।

मानव की समस्याएं देखने में अनेक किन्तु मूल में एक है, अर्थात् काम, क्रोध, लोभ मोहरूपी शत्रुओं पर विजय प्राप्ति और अन्तर्द्वन्द का अन्त। नहुष रूपी मानव का पतन इसी कारण होता है। स्वर्ग में भी इन अन्तर्जगत के तस्करों से पीछा नहीं छूटता। ये ही वहां के असुर हैं, जो रह रहकर मानव के स्वभाव का विलोप करते हैं।

किन्तु यह मानव की चिरन्तन समस्या है, जिससे वह जूझता रहा है और आगे भी यदि जीवित रहा, तो जूझता रहेगा। मानव का तात्कालिक संकट वह आत्मविनाश है, जिसका अभिनय वह विश्व के रंगमंच पर करने चला है। दिवोदास के मानव ने यह सोचा था—

हम मनुष्य होकर क्या चाहें ?
देवों से भी अधिक क्यों न यह अपना भाग्य सराहें ?
निज सुयोग पर गर्व जनाएं,
इस जीवन को पर्व बनाएं।

मानव की जो साध थी, सब उसे प्राप्त हुई है। जल, थल, नभ, में जो अबाध गति वह चाहता था, वह उसे मिल गई है—

बाष्प और विद्युत् हैं किंकर से उसके
उसके समक्ष खड़ी अचला सी चंचला !
हाथ में रसायन है और सिद्धि साथ है
भौतिक विभव देखा ऐसा कब किसने ?

मानव का यह स्वस्थ रूप और उसके विनाश का चीत्कार 'पृथिवी-पुत्र' नाम की कविता में सुनाई पड़ता है। सचमुच इस लघु काव्य में विश्व मानस के नवीनतम अनुभवों का विस्फोट हुआ है। 'पृथिवी पुत्र' विश्वसाहित्य की कृति है। न केवल एक देश किन्तु सारी मानव जाति की सबसे बड़ी समस्या पर इसमें आत्मनिरीक्षण किया गया है। युद्ध से युद्ध को समाप्त करने का दर्प सीधा पागलपन है। इसी लिए माता भूमि अपने पुत्र से कहती है—

बालक भला था आज पागल हुआ है तू।
नाम कुछ और हाय काम कुछ और है॥

सचमुच नाम मानव का और काम दानव का—यही आज मानव की स्थिति है। माता के अभिशाप से घबड़ा कर पुत्र प्रश्न करता है—

तो क्या चाहती है तू बता दे अभी मुझको।



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इस प्रश्न का उत्तर किसी एक देश के विकास में नहीं, मानव जाति के विकास में है। मानव जाति इतिहास की दीर्घकालीन यात्रा के जिस मोड़ पर पहुँची है, वहां प्रातःकालीन क्षितिज पर उदित होते हुए बाल सूर्य के समान विश्व मानव का जन्म हो रहा है। हमें जो राष्ट्रीयता इष्ट रही है उस सबका सफल पर्यवसान मानवतावाद में प्रस्फुटित हो रहा है। उसकी सच्ची स्वीकृति और अवलम्बन से ही अब जीवन की सफलता संभव होगी—

जो सबको लेकर चल सके सच्चा वही समर्थ है :

और भी,

लाख विचार व्यर्थ होंगे यदि हो न एक आचार।
मन से नहीं किन्तु तन से ही जाना होगा पार।

पृथिवी अपने नवजात शिशु को अब विश्व मानव के रूप में देखना चाहती है। देश-देश से इसी आदर्श के स्वर ऊँचे उठ रहे हैं। अचिर भविष्य में विश्वमानव को विश्व सेवा का व्रत लेना ही होगा—

माताभूमि—तुझको बड़े से बड़ा देखा चाहती हूँ मैं
मेरे जात ! सारे जन्तुओं में मुख्य तू ही है,
किन्तु छोटा होकर ही कोई बड़ा होता है।
मिथ्या दर्प छोड़ने का साहस हो तुझमें
तो व्यक्तित्व अपना समष्टि में मिला दे तू
देश, कुल, जाति किंवा वर्ग भेद भूल कर
जा तू विश्व मानव हो सेवा कर सब की।
भीति नहीं प्रीति यथा रीति तेरी नीति हो
उठ बढ़ ऊँचा चढ़ संग लिए सब को।
सबके लिए तू और तेरे लिए सब हों।

पृथिवी पुत्र में मानव की विफलता या अप्राप्त अभिलाषा है। उसकी पूर्ति युधिष्ठिर के इस आदर्श में सामने आती है—

युधिष्ठिर—राम, अब मैं यह कहता हूँ मन से—
कामना नहीं है मुझे राज्य की वा स्वर्ग की,
किं वा अपवर्ग की भी, चाहता हूँ मैं यही
ज्वाला ही जुड़ा सकूँ मैं अपनों के दुःख की
भोगूँ अपनों का सुख, मेरा पर कौन है ?
सब सुख भोगें सब रोग से रहित हों—
सब शुभ पावें, न हो दुखी कहीं कोई भी।

अपार करुणा से भरा हुआ यह वही मानव का मन है, जिसे वैष्णव धर्म में भगवद् भक्त का चित्त और महायान धर्म में बोधिचित्त कहा गया था। प्रह्लाद जैसे भक्तों ने भगवान् के चरणों में अनुराग रखते हुए और मानवों के हित में चित्त की वृत्ति दृढ़ करते

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हुए कहा था—"मुझे राज्य नहीं चाहिए, स्वर्ग नहीं चाहिए और मोक्ष भी नहीं चाहिए। त्रिविध दुःखों से संतप्त प्राणियों का दुःख किस प्रकार दूर हो मेरी यही कामना है।" महायान बौद्ध धर्म के शब्दों में मानव के लिए जीवन की प्रेरणा का जो स्रोत है वह एकमात्र करुणा भावना से मानव की समस्याओं का समाधान करना है। जीवन की प्रेरणा देने वाला जो सत्य मनुष्य के लिए है उसका प्रयोजन न राज्य है न स्वर्ग है, न इन्द्रपद या चक्रवर्ती राजाओं का पद है। उसका एकमात्र उद्देश्य यही है कि मानव को मानवोचित उत्तम प्रज्ञा प्राप्त हो और मन की उस स्वच्छ वृत्ति से वह उन्हें जो इन्द्रियों में आसक्त हैं, आत्मनिग्रह के लिए प्रेरित कर सके, जिन्हें कोई धैर्य देने वाला नहीं है उन्हें आश्वस्त कर सके, जो वृद्ध हैं उन्हें बन्धन-मुक्त कर सके और जिनका चित्त शान्त नहीं है उन्हें सुखी कर सके।[१]

देवी रूपावती की पृष्ठभूमि में जो यह करुणा की भावना थी वह किसी सम्प्रदाय विशेष की सम्पत्ति नहीं, वह तो मानव की शाश्वत भावभूमि है जिसका देश और काल में अन्त नहीं है। युधिष्ठिर उसी सनातन मानव के प्रतिनिधि हैं। 'जयभारत' में इसी शाश्वत आदर्श की विजय कवि को इष्ट है। मनुष्य की जो साधना है वह अधिक से अधिक मानवता का कौन सा स्तर प्राप्त कर सकती, युष्ठिर में उसी का दृष्टान्त है। कवि के अनुसार स्वर्ग में भी वैसा देव पुष्प दुर्लभ है, जैसा युधिष्ठिर के रूप में इस पृथिवी पर खिल सकता है। स्वयं कृष्ण द्रौपदी से कहते हैं—

नर साधना से अधिक नरकुल को युधिष्ठिर से मिला।
क्या स्वर्ग में भी सुलभ यह जो सुमन धरती पर खिला?

गुप्त जी के मानवीय आदर्श का यह आधा ही चित्र है। उसका दूसरा आधा भाग गृहस्थ की महिमा का प्रतिपादन एवं प्रवृत्तिमार्ग की आवश्यकता का आग्रह है। मानव अपने कल्याण का चतुर्भुजी स्वस्तिक बनाना चाहता है। सर्वप्रथम अपने निजी केन्द्र में, दूसरे उस परिवार के लिए जिसकी परिधि में उसका जीवन पल्लवित, पुष्पित और प्रतिफलित होता है, तीसरे उस समाज या राष्ट्र के जीवन में जिसका वह अंग है और चौथे उसे विश्वमानव के लिए जिसके साथ उसका निःसीम संबन्ध है, सर्वथा कल्याण की भावना एवं सर्वविध स्वस्तिक का निर्माण होता है। मानवीय विकास के चारों रूप गुप्त जी की काव्य भावना का अभिन्न अंग है। इस सामग्री का बहुविध अध्ययन सम्भव है। अर्वाचीन युग के लिए भारतीय संस्कृति की नई व्याख्या गुप्त जी के काव्य की महती विशेषता है।

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[१] येन सत्येन मया दारकस्यार्थाय उभौ स्तनौ परित्यक्तौ, न राज्यार्थं, न भोगार्थं, न शक्रार्थं, न राज्ञां चक्रवर्तिनां विषयार्थं, नान्यत्र अहं अनुत्तरां संबोधिं अभिसंबुद्धय, अदान्तानानयेयम्, अमुक्तान् मोचयेयम्, अनाश्वस्तान् आश्वासयेयम्, अपरिनिर्वृतान्, परिनिर्वापयेयम्। (दिव्यावदान, रूपवती अवदान, पृ० ४७३)।

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# पंडित राज के मत में काव्य का आत्मा

## शालिग्राम उपाध्याय—संस्कृत महाविद्यालय

संस्कृत साहित्य में काव्य के आत्मा के संबन्ध में बहुत कुछ विचार किया गया है। किसी ने रस को, किसी ने रीति को, किसी ने वक्रोक्ति को तथा किसी ने भोग को, किसी ने ध्वनि को, किसी ने असंलक्ष्यक्रम व्यंग्य को एवं किसी ने औचित्य को काव्य का आत्मा माना है। संस्कृत के अनेक लक्षण ग्रंथों के अनुवाद होने पर भी अनेक विद्वानों को यह जिज्ञासा बनी ही रहती है कि पंडित राज जगन्नाथ ने काव्य का आत्मा किसे माना है। इस प्रश्न पर विचार करना ही इस लेख का उद्देश्य है।

कुछ लोगों का यह कहना है कि पंडित राज के मत से व्यंग्य ही काव्य का आत्मा है। इसकी पुष्टि में वे लोग उपमालंकार निरूपण से पहले अलंकार सामान्य का लक्षण, जिसे पंडितराज ने लिखा है उद्धरण स्वरूप में देते हैं—

"अथास्य प्रागभिहित लक्षणस्य काव्यात्मनो व्यंग्यस्य रमणीयताप्रयोजका अलंकारा निरूप्यन्ते—"

इस पंक्ति का अर्थ भी वे करते हैं कि जिसका लक्षण पहले कहा जा चुका है, इस प्रकार का काव्य का आत्मारूप जो व्यंग्य उसकी रमणीयता के प्रयोजक अलंकारों का निरूपण अब किया जाता है।

यहाँ पर "काव्यात्मनो व्यंग्यस्य" से काव्य का आत्मा व्यंग्य समझ कर वे लोग स्पष्ट अक्षरों में कहते हैं और लिखते हैं कि काव्य का आत्मा केवल रस नहीं है प्रत्युत रस, वस्तु और अलंकार त्रिविध व्यंग्य है। वस्तुध्वनि और अलंकार ध्वनि को काव्यात्मा मानने के लिये वे लोग यह दलील देते हैं कि पंडितराज ने काव्यलक्षण निरूपण के समय लिखा है—

"यत्तु रसवदेव काव्यमिति साहित्यदर्पणे निर्णीतम्, तन्न। वस्त्वलंकारप्रधानानां काव्यानामकाव्यत्वापत्तेः।"

अर्थात् यह जो साहित्यदर्पण में निर्णय किया गया है कि रस से युक्त को ही काव्य कहते हैं, वह नहीं हो सकता। क्योंकि ऐसा मानने पर वस्तु और अलंकार प्रधान काव्यों में अव्याप्ति दोष होने लगेगा, जिसे सभी लोग काव्य मानते हैं।

उपर्युक्त दोनों पंक्तियों के आधार पर वे लोग यह स्वीकार करते हैं कि पंडितराज ने त्रिविध व्यंग्य को काव्य का आत्मा माना है, केवल रस को नहीं।

यद्यपि स्थूल दृष्टि से विचार करने पर यह संदेह बना ही रहता है परन्तु सुक्ष्म दृष्टि से पर्यालोचन करने पर रसगंगाधर का मत भी स्पष्ट झलकने लगता है। वस्तुतः "काव्यात्मनो व्यंग्यस्य" का अर्थ काव्य का आत्मा त्रिविध व्यंग्य नहीं लिया जा सकता। वहाँ

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काव्य का आत्मा केवल रस ही लिया जा सकता है। यद्यपि इस अवस्था में यह प्रश्न किया जा सकता है कि क्या रस की ही रमणीयता के प्रयोजक अलंकार होते हैं, अथवा वस्तु व्यंग्य एवं अलंकार व्यंग्य के भी ? क्योंकि आगे चल कर रस गंगाधरकार ने स्वयं इन दोनों के पृथक् पृथक् उदाहरण भी दिये हैं। परन्तु त्रिविध व्यंग्य को भी काव्य का आत्मा मान लेने पर गला नहीं छूट सकता क्योंकि पंडितराज ने तो न केवल व्यंग्य के ही अपितु वाच्य वस्तु रमणीयता के प्रयोजक एवं वाच्यालंकाररमणीयता के भी प्रयोजक अलंकारों को माना है। वाच्यवस्तु का उपस्कारक उपमालंकार का उदाहरण पंडितराज ने दिया है—

"अमृतद्रवमाधुरीभृतः सुखयन्ति श्रवसी सखे गिरः।
नयने शिशिरी करोतु मे शरदिन्दुप्रतिमं मुखं तव ॥"

यहाँ पर नयन का शिशिरीकरण रूप वस्तु वाच्य है। इसमें मुख का शरदिन्दु के समान होना उसका उपस्कारक है। यह तो बात हुई वाच्यवस्तु के उपस्कारक अलंकार की। अब वाच्यालंकार के उपस्कारक अलंकार का उदाहरण देखिए :—

"शिशिरेण यथा सरोरुहं दिवसेनामृत रश्मि मण्डलम् ।
न मनागपि तन्वि शोभते तव शेषेण तथेदमाननम् ॥"

यहाँ पर दीपकालंकार वाच्य है, और उसकी उपकारिका उपमा है। इस विषय में तो संदेह भी नहीं किया जा सकता कि अलंकार का उपस्कारक अलंकार कैसे होगा ? यद्यपि रसादि ध्वन्यमान होने के नाते प्रधान हैं, फिर अलंकार भी रसादि के समान ध्वन्यमान होते हैं। अतः वे भी प्रधान हो गए और इस प्रकार से वे अलंकार्य भी हो गए। अतः वाच्य अलंकार भी कभी मुख्य होने के नाते अलंकार्य हो सकते हैं। उनके उपस्कारक भी अलंकार हो सकते हैं। इस विषय में विवाद का स्थान नहीं। जिस प्रकार से बाजार में स्थित कर्णफूल में जटित रत्न, बाजारू कर्णफूलों की शोभा बढ़ाते हैं, और जब वे कर्णफूल नायिका के कानों में लगते हैं तो रत्न साक्षात् और परम्परा कर्णफूल की शोभा बढ़ाते हुए कान की शोभा बढ़ाते हैं। उसी प्रकार अलंकार भी अलंकार की शोभा बढ़ाते हैं। इस तरह से यह बात ठीक नहीं जँचती कि पहले त्रिविध व्यंग्य की रमणीयता के प्रयोजक अलंकारो को मानकर बाद में व्यंग्येतर की भी रमणीयता के प्रयोजक अलंकारों का उदाहरण दिया जाय। अतएव उस पंक्ति का अर्थ स्पष्ट करने के लिए "काव्यात्मनो व्यंग्यस्य" इस स्थल में सामान्य रूप से रस को ही लिया जायगा, जो रसगंगाधरकार को इष्ट है। रस के अतिरिक्त वस्तु व्यंग्य और अलंकार व्यंग्य तथा वाच्यवस्तु और वाच्यालंकार की भी रमणीयता के प्रयोजक अलंकार होते हैं। इसमें रसगंगाधरकार को किसी प्रकार की आपत्ति नहीं। जब वहाँ "व्यंग्यस्य" से रस को लिया जायगा तभी नागेशभट्ट के भी अनकूल होगा। "रसगंगाधर" के एकमात्र संस्कृत टीकाकार पं० नागेशभट्ट ने वहाँ (व्यंग्यस्य में) भेद अर्थ में षष्ठी विभक्ति मानी है, जिससे यह अर्थ किया जाता है कि काव्य का आत्मा जो व्यंग्य भेद अर्थात् रस, उसकी रमणीयता के प्रयोजक अलंकार होते हैं।

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त्रिविध व्यंग्य को काव्य का आत्मा मानने वालों की दूसरी दलील भी ठीक नहीं जँचती। वस्तु और अलंकार प्रधान को काव्य मांनने का यह तात्पर्य नहीं लगाया जा सकता कि काव्य का आत्मा वस्तुध्वनि एवं अलंकार ध्वनि भी हैं। पंडितराज ने काव्यत्त्व तो लक्षणामूला ध्वनि—अर्थान्तर संक्रमितवाच्य एवं अत्यन्त तिरस्कृतवाच्य में भी माना है तो उसे क्यों नहीं काव्य का आत्मा कहते? एवं जहाँ अर्थ चमत्कृति से उपस्कृत शब्द चमत्कृति हो उस अधम काव्य में एवं व्यंग्यचमत्कार समानाधिकरण वाच्यचमत्कार अर्थात् गुणीभूत व्यंग्य में भी काव्यत्मत्व चला जायगा, जो त्रिविध व्यंग्य को भी काव्य का आत्मा मानने वालों के मत के विरूद्ध हो जायगा। पंडितराज ने तो रस निरूपण के अवसर पर स्पष्ट कर दिया है कि काव्य का आत्मा (काव्य में परमरमणीय) रसध्वनि है :—

"एवं पञ्चात्मके ध्वनौ परमरमणीयता रसध्वने स्तदात्मा रसस्तावदभिधीयते।" अर्थात् "तीन अभिधा मूलध्वनि और दो लक्षणामूलध्वनि में रस ही परमरमणीय है और वही ध्वनि का आत्मा है, अतः उसका निरूपण किया जा रहा है।" उपर्युक्त पंक्ति से यही सिद्ध होता है कि पंडितराज रस को काव्य में आत्मस्थानी मानना चाहते हैं। इसीलिये (काव्य का आत्मा रस मानने के ही कारण) गुण विवेचन के समय आत्मा को निर्गुण मानकर गुणों को चित्तवृत्ति रूप एवं रसप्रयोज्य माना है :—"किं चात्मके निर्गुणतयात्मरूप रसगुणत्वं माधुर्यादीनामनुपपन्नम्।"

ध्वन्यालोककार ने भी "काव्यस्यात्मा ध्वनिरिति बुधैः" से भूमिका प्रारम्भ करके अन्त में यही सिद्ध किया है कि काव्य में परमरमणीय अत एव आत्मस्वरूप रस ही है। क्योंकि "काव्यस्यात्मा स एवार्थस्तथा चादि कवेः पुरा। क्रौञ्चद्वन्द्व वियोगोत्थः शोकः श्लोकत्वमागतः।" यहाँ "स एवार्थः" से प्रतीयमान का तृतीयप्रभेद रस ही लिया जायगा। इसलिये कि इस कारिका से पहले "तृतीयोऽपि प्रभेदो वाच्याद्भिन्न एव स्थितम्।" लिखकर रसप्रभेद को वाच्य से भिन्न सिद्ध किया गया है। इसलिये जो कहते हैं कि ध्वनिकार ने प्रतीयमान अर्थ को काव्य का आत्मा माना है, उनका कहना भी उचित नहीं। ध्वन्यालोककार ने तो रसनिरूपण के लिये ही सर्वप्रथम सहृदयश्लाध्य अर्थ को काव्य का आत्मा माना है, जिसके वाच्य और प्रतीयमान दो भेद होते हैं—

"योऽर्थः सहृदय श्लाघ्यः काव्यात्मेति व्यवस्थितः।
वाच्य प्रतीयमानाख्यौ तस्य भेदावुभौ स्मृतौ॥"

फिर प्रतीयमान अर्थ को काव्य में रमणीय अङ्गना के लावण्य के समान माना है और उसके वस्तु, अलंकार और रसध्वनि तीन भेद मानकर तीसरे रस रूप भेद को वस्तुतः काव्य का आत्मा माना है। वस्तु और अलंकार ध्वनि में काव्यात्मत्व मानना तो केवल भूमिकामात्र है। जैसे आत्मा के निरूपण के लिये दार्शनिकों ने सर्व प्रथम स्थूल शरीर को, फिर इन्द्रियग्राम को बाद में मन को मानते हुए उसके वास्तविक स्वरूप को स्पष्ट किया है। उसी प्रकार से अर्थ से चल कर रस में काव्यात्मत्व मानने में ऐतिहासिकता एवं उसकी भूमिका मात्र है। इसी का उल्लेख ध्वन्यालोक के सर्व प्रसिद्ध एवं सर्वमान्य

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टीकाकार श्री अभिनव गुप्त पादाचार्य ने "काव्यस्यात्मा स एवार्थः" इस कारिका की व्याख्या के अवसर पर लोचन में किया है—

"एवं प्रतीयमानं पुनरन्यदेव" इतीयता ध्वनि स्वरूपं व्याख्यातम्। अधुना काव्यात्मत्वमिति हासव्याजेन च दर्शयति—काव्यस्यात्मेति। स एवेति प्रतीयमानमात्रेऽपि प्रक्रान्ते तृतीय एव रसध्वनि रिति मन्तव्यं, इतिहासबलात् प्रक्रान्तवृत्ति ग्रन्थार्थबलाच्च। तेन रस एव वस्तुतः आत्मा, वस्त्वलंकारध्वनि तु सर्वथा रसं प्रति पर्यवस्येते इति वाच्यादुत्कृष्टौ तावित्यभि प्रायेण "ध्वनिः काव्यस्यात्मेति सामान्येनोक्तम्।"

(अर्थात् इस प्रकार से "प्रतीयमानं पुनरन्यदेव" इस कारिका के द्वारा ध्वनि स्वरूप की व्याख्या की गई। अब इतिहास के बहाने काव्य का आत्मा दिखलाया जा रहा है—"काव्यस्यात्मा स एवार्थः" "काव्य का आत्मा वही अर्थ है" यहाँ पर 'स एव' अर्थात् 'वही है' इस शब्द के द्वारा प्रतीयमान मात्र अर्थ के उपस्थित होने पर भी उसमें तीसरा भेद रसध्वनि ही मानना चाहिए। क्योंकि इतिहास के द्वारा और उपस्थितवृत्ति के द्वारा रस रूप प्रतीयमान अर्थ ही लिया जा सकता है। अतः रस ही वस्तुतः काव्य का आत्मा है, वस्तु ध्वनि और अलंकार ध्वनि तो सर्वथा रस में ही पर्यवसित होते हैं, हाँ, वे वाच्य से उत्कृष्ट भले ही हैं। इस अभिप्राय से "काव्यस्यात्मा ध्वनिरिति बुधैः" ये शब्द सामान्यतया उक्त हैं।)

आगे वृत्ति ग्रंथ में स्वयं आनन्दवर्धनाचार्य ने यह स्पष्ट किया है कि अनेक प्रकार के अर्थ, शब्द एवं रचना के विस्तार के सुंदर जो काव्य उसका वही—प्रतीयमान रसरूप अर्थ ही सारभूत है अर्थात् आत्मा है :—"विविध वाच्यवाचकरचना प्रपंचचारुणः काव्यस्य स एवार्थः सारभूतः।" और इसीलिए ध्वनिकार ने शीघ्रही रस का ही उदाहरण दिया है। उसके भी आगे उन्होंने स्पष्ट किया है कि प्रतीयमान के अन्यभेदों के होने पर भी रसभाव मुख से ही वह उपलक्षित होता है।

इस उपर्युक्त विवेचन से यह सिद्ध किया गया कि ध्वनिकार ने भी रस को ही काव्य का आत्मा माना है और उसमें संदेह का रंचमात्र भी स्थान नहीं। व्यक्ति विवेककार ने भी इसे स्वीकार किया है कि काव्य का आत्मा रसादि रूप अर्थात् रस भावादि असंलक्ष्यक्रम व्यंग्य है, इसमें किसी का विरोध नहीं—

"काव्यस्यात्मनि संज्ञिनी रसादिरूपे न कस्यचिद्विमतिः।"

—व्यक्ति विवेक

मम्मट ने भी काव्य में आत्मस्थानी रस को ही माना है। इसीलिए ओज, माधुर्य और प्रसाद इन तीनों गुणों को शौर्यादि गुणों के समान आत्मा का गुण माना है, जो आत्मा रूप रस के साक्षात् उत्कर्षाधायक होते हैं। उन्होंने अलंकारों को शब्दार्थों की शोभा बढ़ाते हुए आत्मा रूप रस की परंपरा शोभा बढ़ाने वाले कटक कुंडल के समान माना है। गुण का लक्षण करते हुए लिखा है—

"ये रसस्याङ्गिनो धर्मा शौर्यादय इवात्मनः।
उत्कर्ष हेतवस्ते स्युरचलस्थितयो गुणाः॥"

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अर्थात् जो अङ्गीभूत रस के उत्कर्ष हेतु होते हैं वे, जिस प्रकार शौर्यादिगुण आत्मा के उत्कर्षक होते हैं वैसे ही होने के कारण गुण कहलाते हैं। रस के साथ उनकी अचल स्थिति है, अर्थात् वे रस के बिना नहीं रह सकते, उसके साथ उनका अविनाभाव संबन्ध है। इसी प्रकार से अलंकार का लक्षण करते हुए मम्मट ने लिखा है—

"उपकुर्वन्ति तं सन्तं येऽङ्गद्वारेण जातुचित् ।
हारादिवदलंकारास्ते ऽनुप्रासोपमादयः ॥"

अङ्गीभूत रस के स्थित रहते हुये जो अङ्गों (शब्दार्थों) के माध्यम से रस की शोभा का उत्कर्ष करें वे तो हारादि अलंकारों के समान होने के कारण अनुप्रास, उपमादि अलंकार हैं।

इस प्रकार से हम देखते हैं कि काव्य के आत्मा के संबन्ध में ध्वन्यालोककार, लोचनकार, व्यक्तिविवेककार, काव्यप्रकाशकार एवं रसगंगाधरकार में किसी प्रकार का वैमत्य नहीं है। वे सभी एक स्वर से काव्य का आत्मा रसादिरूप असंलक्ष्य क्रमव्यंग्य को मानते हैं। हाँ, पंडितराज ने व्यंग्य की ही रमणीयता के प्रयोजक अलंकारों को न मानकर वाच्यवस्तु और वाच्यालंकार की भी रमणीयता के प्रयोजक अलंकारों को माना है।

उपर्युक्त विवेचन से यह निश्चित हो जाता है कि रसगंगाधरकार ने काव्य का आत्मा रस ही माना है, जिससे आनन्दवर्धन, अभिनवगुप्त, महिमभट्ट, मम्मट और साहित्यदर्पणकार विश्वनाथ महापात्र भी सहमत हैं। उन्होंने त्रिविध व्यंग्य को काव्य का आत्मा नहीं माना है। ध्यान रहे कि सभी आचार्यों ने रस से असंलक्ष्यक्रम व्यंग्य को लिया है।

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# चरक संहिता और कवि अश्वघोष

## अत्रिदेव विद्यालंकार

कवि अश्वघोष का समय निश्चित करने में चरक संहिता का विशेष महत्त्व है। यह विचार बहुत समय से प्रसिद्ध है कि कनिष्क की राज्यसभा में अश्वघोष थे और कनिष्क के राजवैद्य का नाम चरक था। चरक कौन था यह प्रश्न पृथक् है। चाहे इसने चरक संहिता का प्रति संस्करण किया अथवा दूसरे चरक ने यह भिन्न प्रश्न है।

उपलब्ध चरकसंहिता के बहुत से वचन, उपमायें, दार्शनिक शब्द अश्वघोष की रचना में मिलते हैं। हमारे सामने इस समय अश्वघोष की दो ही रचनायें हैं, एक सौन्दरानन्द काव्य और दूसरा बुद्ध चरित। दौर्भाग्य से बुद्धचरित का मूल सम्पूर्ण नहीं मिलता; आधे भाग का अनुवाद ही मिलता है। इतनी सामग्री के आधार पर ही बहुत कुछ जानकारी मिलती है।

लेखक के समय या उसके विचारों की जानकारी के लिये उसके कार्य-रचना से उत्तम और सबल प्रमाण दूसरा नहीं होता। इसलिये अश्वघोष की रचनाओं की चरक संहिता से तुलना करके देखने में बहुत सी बातें स्पष्ट हो जाती हैं। साथ ही जब हम देखते हैं कि कालिदास जैसे पिछले कवियों ने तथा उसके पीछे के दार्शनिक जगत में वे शब्द एक दम से लुप्त हो गये; उनका चलन एक दम से समाप्त हो गया।

इस प्रकार का एक शब्द **'धातुसाम्य'** है। आयुर्वेद में (चरक में) धातु साम्य का अर्थ स्वस्थता-प्रकृतिस्थ है। इस अर्थ में यह शब्द सुश्रुत संहिता में नहीं मिला। चरक संहिता में अत्रिपुत्र ने यह शब्द मुक्त रूप में व्यवहार किया है; यथा—

······कार्यं धातु साम्यमिहोच्यते।
धातुसाम्य क्रिया चोक्ता तन्त्रस्यास्य प्रयोजनम्॥ सू. १।५३.

चिकित्सा का कार्य ही धातु साम्य है; इस तंत्र का प्रयोजन भी धातु साम्य ही। धातुओं की विषमता नाम ही विकार रोग है [विकारो धातु वैषम्यमू–सू. अ. ९]। धातुसाम्य होना ही कुशल-मंगल है।

इसीलिये भगवान बुद्ध जब अराड् के पास पहुंचे, तब उन्होंने बुद्ध का कुशल मंगल पूछने में धातु साम्य शब्द का ही प्रयोग किया—

तावुभौ न्यायतः पृष्ट्व धातु साम्यं परस्परम्।
दारव्योर्मध्ययोर्वृष्योः शुचौ देशे निषेदतुः॥ बु. च. १२

एक दूसरे का धातु साम्य-कुशल मंगल पूछने के वाद वे दोनों दो वृक्षों के बीच में पवित्र-साफ़ स्थान पर बैठ गये।



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कालिदास यह अन्य दूसरे कवियों की रचना में कुशल मंगल के अर्थ में धातु साम्य के स्थान पर कुशल शब्द मिलने लगता है [ अव्यापन्नः कुशलमबले पृच्छति त्वां वियुक्तः- मेघदूत; क्वचित्ते कुशलम्-इत्यादि ]। धातु साम्य शब्द चरक संहिता के पीछे सुश्रुत संहिता में भी नहीं मिलता।

अश्वघोष की उपमायें भी चरक संहिता के साथ मिलती हैं; ये उपमायें भी पीछे के कवियों की रचना में नहीं मिलती। उदाहरण के लिये—

(१) **चित्रघट की उपमा**—मंगल कार्यों में कच्चे घड़ों पर चूना पोत कर उस पर चित्रकारी की जाती है, इनको मंगल घट कहा जाता है। ये मंगल घट सिवाय मंगल कार्य के किसी अन्य काम नहीं आते इनसे जल कार्य नहीं लिया जा सकता। इन्हीं घटों को उपमा अत्रिपुत्र ने कालमृत्यु और अकाल मृत्यु का निश्चय करने में दी है। यदि इन घटों को सुरक्षित रूप में रक्खा जाये तो बहुत समय तक रहते हैं; और यदि सुरक्षित रूप में न रक्खें-ठीक देख भाल न करें तो जल्दी ही टूट जाते हैं; यही बात आयु के साथ है। यदि आयु की सुरक्षा की जाये तो मृत्यु काल में होती है और ठीक प्रकार से न की जाये तो अकाल में मृत्यु होती है।

अश्वघोष ने भी शरीर की उपमा मिट्टी के घड़े से ही दी है यथा—

शरीरमामादपि मृन्मयाद् घटादिदं तु निःसारतमं मंत मम।
चिरं हि तिष्ठेद् विधिवद् धृतो घटः समुच्छ्रयोऽयं सुधृतोपि भिद्यते॥
सौ. ९।११

केवल आयु और शरीर शब्द का ही भेद है। अत्रिपुत्र ने आयु की उपमा मिट्टी के घड़े से की है, कवि ने शरीर की उपमा की है।

२—**चित्र प्रदीप** की उपमा भी इसी प्रकार की है। चित्र में बने प्रदीप से प्रदीप का काम नहीं होता; न तो वह प्रकाश देता है और न दूसरे दीपक को जलाने में समर्थ होता है। इसी प्रकार से वीर्य रहित नपुंसक पुरुष का जीवन अत्रिपुत्र ने बताया है। जिस प्रकार से चित्र में चित्रित प्रदीप देखने मात्र के लिये ही प्रदीप है; उसी प्रकार से संतान रहित पुरुष भी देखने मात्र को ही पुरुष है।

कवि अश्वघोष ने भी बनावटी भिक्षु की उपमा चित्र प्रदीप से की है, उसका साधु वेश केवल दिखावा है—

पाणौकपालमवधाय विधाय मौण्ड्यं
मानं निधाय विकृतं परिधाय वासः।
यस्योद्भवो न धृतिरस्ति न शान्तिरस्ति
चित्रप्रदीप इव सोऽस्ति च नास्ति चैव॥ सौ. ७।४८.

चरक संहिता की शब्द रचना एवं भावों के साथ कवि की शब्द रचना और भाव बिल्कुल मिलते हैं। देखिये वसन्त वर्णन—

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कवि अश्वघोष की रचना—

निरीक्षमाणस्य जलं सपद्मं वनं च फुल्लं परपुष्टजुष्टम् ।
कस्यास्ति धैर्यं नवयौवनस्य मासे मधौ धर्मसपत्नभूते ॥ सौंदरा ४।२३

अत्रिपुत्र की रचना मिलाइए—

सुखा सहायाः परपुष्टघुष्टाः फुल्ला वनान्ताः विशदान्नपानाः ।
वयो नवं जातमदश्च कालो हर्षस्य योनिः परमानराणाम् ॥

इसमें परपुष्टधुष्टा=परपुष्टजष्टम्; फुल्ला वनान्ता=वनं च फुल्लं; वयो नवं=नवयौवनस्य; जातमदश्च कालः=धर्मसपत्नभूते; ये शब्द एक ही सांचे के ढले दीखते हैं; धर्मसपत्नभूते=जातमदश्चकालः—ये दोनों शब्द वस्तुस्थिति को स्पष्ट करते हैं ।

इनसे भी बढ़कर दार्शनिक शब्द रचना है। ये शब्द ऐसे हैं; जिनके नाम और इनकी व्याख्या सिवाय अत्रिपुत्र और कवि अश्वघोष की रचना के सिवाय कहीं भी आप को देखने में नहीं मिलेगी। दर्शनशास्त्र में भी ये शब्द इस अर्थ में कहीं भी नहीं बरते गये। आस्तिक और नास्तिक दोनों दर्शनों के विद्वानों ने इन शब्दों पर विचार नहीं किया। केवल चरकसंहिता और अश्वघोष की रचना में ही इनका प्रयोग है और वह भी एक ही अर्थ में। यथा—

संसार में प्रवृत्ति और निवृत्ति एवं मोक्ष का उपाय बताते हुए अत्रिपुत्र ने अग्निवेश को कहा—"मोह, इच्छा, द्वेष, धर्म, अधर्म, कर्म इनके कारण से प्रवृत्ति होती है। इनके कारण से अहंकार, **संग, संशय, अभिसंप्लव, अभ्यवपात, विप्रत्यय, अविशेष** और **अनुपाय** होते हैं: जिस प्रकार से बड़ी शाखाओं वाला वृक्ष छोटे वृक्ष को दबा लेता है; उसे पनपने नहीं देता, उसी प्रकार से ये सात पुरुष को घेर लेते हैं और मोक्ष में प्रवृत्त नहीं होने देते। इनसे दबा मनुष्य अपने वास्तविक रूप को नहीं पहिचान पाता। इनमें—

जाति–रूप वित्त–वृत्त–बुद्धि–शील–विद्या–अभिजन–वय–वीर्य–प्रभाव से मैं सम्पन्न हूँ—बड़ा हूँ—ऐसा समझना **अहंकार है** [ धर्मकीर्ति ने प्रमाणवार्त्तिक में कहा है—स्नान से धर्म मानना, जाति का अभिमान—ये ध्वस्त प्रज्ञावालों की मूर्खता के चिन्ह हैं ]।

मन-वाणी-कर्म से मोक्ष के लिये काम न करना **संग** है। कर्मफल, मोक्ष, पुनर्जन्म, पुरुष आदि हैं या नहीं यह **संशय** है। सब अवस्थाओं में अपने को ब्रह्म से अभिन्न मानना, मैं बनाने वाला हूँ, स्वभाव से ही मैं सिद्ध हूँ, शरीर-इन्द्रय-बुद्धि-स्मृति में अपने को राशि पुरुष समझना **अभिसंप्लव** है। माता-पिता-भाई-पत्नी, पुत्र-बन्धु; मित्र-भृत्य मेरे हैं और मैं इनका हूँ—**अभ्यवपात** है। कार्य में अकार्य, शुभ-अशुभ–हित-अहित में विपरीत बुद्धि, का होना **विप्रत्यय** है। ज्ञान-अज्ञान में; प्रकृति-विकृति में; प्रवृत्ति और निवृत्ति में एक समान बुद्धि रखना **अवशेष** है। प्रोक्षण, अनशन, अग्निहोत्र, त्रिषवण, अभ्युक्षण, आवाहन यजन, याजन, सलिल प्रवेश, अग्नि प्रवेश आदि कार्यों का करना **अनुपाय** है।

जिस प्रकार से वृक्ष पक्षियों के बैठने का स्थान होता है; उसी प्रकार से धी, धृति, स्मृति, अहंकार से भरा, दुनियाँदारी में फंसा, अभिसंप्लव बुद्धि वाला; अन्यथा दृष्टि एवं

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अविशेष ग्राही, विमार्ग में जाने वाला यह मनुष्य मन-शरीर के सब दोषों के कारण सब दुःखों से पीड़ित होता है। इस प्रकार अहंकार आदि दोषों से विभ्रमित मनुष्य प्रवृत्ति को नहीं छोड़ता; यही प्रवृत्ति पाप का मूल है [ शा० अ० ५।१० ]।

भगवान बुद्ध को भी अराड् ने इसी उपदेश को इसी प्रकार दिया है; कवि अश्वघोष के शब्दों में पढ़िए—

विप्रत्ययादहङ्करात्संदेहादभिसंप्लवात् ।
अविशेषानुपायाभ्यां संगादभ्यवपाततः ॥
तत्र विप्रत्ययो नाम विपरीतं प्रवर्त्तते ।
अन्यथा कुरुते कार्यं मन्तव्यं मन्यतेऽन्यथा ॥
ब्रवीम्यहमहं वेद्मि गच्छाम्यहमहं स्थितः ।
इतीहैवमहंकारस्त्वनहंकार वर्त्तते ॥
यस्तु भावानसंदिग्धानेकी भावेन पश्यति ।
मृत्पिण्डवद संदेह संदेहः स इहोच्यते ॥
य एवाहं स एवेदं मनो बुद्धिश्च कर्म च ।
यश्चैवेष गणः सोऽहमिति यः सोऽभिसंप्लवः ॥
अविशेषं विशेषज्ञ प्रति बुद्धा प्रबुद्धयोः ।
प्रकृतिनां च यो वेद सोऽविशेष इति स्मृतः ॥
नमस्कारवष्टकारो प्रोक्षणाभ्युक्षणादयः ।
अनुपाय इति प्राज्ञैरुपायज्ञः प्रवेदितः ॥
सज्जते येन दुर्मेधा मनोवाग्बुद्धि कर्मभिः ।
विषयेष्वपनभिष्वङ्ग सोऽभिष्वङ्ग इति स्मृतः ॥
ममेदमहमष्येति यद् दुःखमभिमन्यते ।
विज्ञेयोऽभ्यवपातः स संसारे येन पात्यते ॥ बुद्ध० च० १२।२४–३२

ये वचन अत्रिपुत्र के प्रवृत्ति मार्ग से मिलते हैं। इससे इतना स्पष्ट है कि भगवान बुद्ध के समय ये वचन इन्हीं अर्थों में प्रवृत्त थे। जिनको कि कवि अश्वघोष और प्रति-संस्कर्त्ता चरक ने एक समान सुरक्षित किया।

इसके सिवाय पुनर्जन्म की विवेचना भी दोनों में एक समान है; चरक संहिता में पुनर्जन्म सिद्ध करने का प्रयत्न किया है, अश्वघोष ने भी पुनर्जन्म की समीक्षा की है। इससे इतना स्पष्ट है कि उस समय यह प्रश्न सन्देह का विषय था। क्योंकि बहुत से दर्शन पुनर्जन्म को नहीं मानते थे; उनकी दृष्टि में यही जीवन है; मृत्यु के पीछे फिर कुछ नहीं रहता। इसलिये इस सन्देह को अत्रिपुत्र और अश्वघोष दोनों ने दूर करने का यत्न किया है। अश्वघोष के शब्द देखिये—

पुनर्भवोऽस्तीति च केचिदाहुर्नास्तीति के चित् नियत प्रतिज्ञाः ।
एवं यदा संशयितोऽयमर्थस्तस्मात्क्षमं भोक्तुमुपस्थिताश्रीः ॥

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अस्तीति केचित्परलोक माहूर्मोक्षस्य योगं न तु वर्णयन्ति ।
अग्नेर्यथा ह्यौष्णमपां द्रवत्वं तद्वत्प्रवृत्तौ प्रकृतिं वदन्ति ।।

सौ० ९.५५; ५७

चरक संहिता में पुनर्जन्म का विचार सूत्र० अ० ११ में किया गया है।

इनके सिवाय आकाश को छोड़कर शेष चार भूतों का विचार; बालों की श्रेष्ठता, चैत्ररथवन, चरक संहिता में वर्णित यज्जः पुरुषीय अध्याय सम्बन्धी विचार अश्वघोष की रचना में पूर्णतः प्रतिविम्बित हैं। जिनके आधार पर बिना संशय के कहा जा सकता है कि अश्वघोष और चरक का समय एक ही हैं; और सम्भवतः ये दोनों समकालिन और एक ही राजा (कनिष्क) के आश्रित हों।[१]

इस समानता को देखकर अश्वघोष को कालिदास से अवश्य पूर्ववर्त्ती कहना पड़ता है। कालिदास की रचना में चरक संहिता की झलक नहीं। परन्तु कालिदास की रचना दृढ़बल से पूर्ण किए चरक संहिता के भाग से बहुत मिलती है। दृढ़बल का समय तृतीय शती का उत्तरार्द्ध या चतुर्थ शती का प्रारम्भ है।[२] कनिष्क का समय ईसा की प्रथम शती या उससे पूर्व का समय सामान्यतः माना जाता है।

में विश्वास करता हूँ कि विद्वत् जन इस पर विचार करने की कृपा करेंगे। अभी तक यह प्रकरण सर्वथा अछूता रहा।

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[१] **'संस्कृत साहित्य में आयुर्वेद'** भारतीय ज्ञानपीठ—बनारस से प्रकाशित—पुस्तक से इसमें सहायता ली है, इसके लिये आभारी हूँ।

[२] देखिए अत्रिदेव विद्यालंकार का आयुर्वेद का वृहत् इतिहास।

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# "पार्श्वनाथ विद्याश्रम आदि विद्यासंस्थाएँ"

## 'दलसुख मालवणिया'

बनारस हिन्दूयूनिवर्सिटी का ध्येय प्रारम्भ से ही रहा है कि भारतीय प्राचीन विद्याओं का भी आधुनिक विद्याओं के साथ अध्ययन-अध्यापन और संशोधन हो। इस दृष्टि से सेन्ट्रल हिन्दू कालेज़ के अतिरिक्त संस्कृत महाविद्यालय की स्थापना महामना पं० मालवीय जी ने की थी। उस महाविद्यालय में भारत के चुने हुए विद्वानों को अध्यापक के स्थान में बिठाने का उनका प्रयत्न था। प्राचीन भारत की सभी विद्याओं का प्रबन्ध उन दिनों आर्थिक कठिनाई के कारण संभव नहीं था फिर भी महामना का इस दिशा में प्रयत्न अवश्य रहा। फलस्वरूप वे जैनज्ञानपीठ के लिए श्वेताम्बर जैन कोन्फरेन्स से अनुदान प्राप्त कर के पं० सुखलाल जी संघवी को जैन दर्शन के अध्यापकपद पर नियुक्त करने में समर्थ हुए। पं० सुखलाल जी बनारस में आये किन्तु उनकी प्रकृति के अनुसार वे केवल अध्यापन से सन्तुष्ट होकर बैठने वाले नहीं थे। उनकी प्रेरणा से यूनिवर्सिटी के सान्निध्य में ई० १९३७ में पार्श्वनाथ विद्याश्रम की स्थापना अमृतसर के लाला हरजसराय जी आदि ने की। यह संस्था हिन्दूयूनिवर्सिटी में जैनदर्शन और धर्म के अध्येताओं के लिए रहने आदि का प्रबन्ध तो करती ही है साथ ही छात्रवृत्ति भी देती है। संस्कृत महा-विद्यालय में जैन दर्शन की शास्त्री और आचार्य परीक्षाओं के छात्रों को तथा बी० ए० और एम० ए० में जैनदर्शन को वैकल्पिक विषय लेने वाले छात्रों को मासिक १० रुपये से लेकर २५ रुपये तक और विशेषावस्था में पचास रुपये तक भी छात्रवृत्ति दी जाती है। इसके उपरान्त पी० एच० डी० के लिए जैनधर्म या दर्शन से संबन्धित किसी भी विषय में संशोधन करने वाले छात्र को मासिक ७५ रुपये से लेकर १५० रुपये तक देने की भी व्यवस्था की गई है। और पी० एच० डी० के थीसिस को मुद्रित करने की भी व्यवस्था है।

पार्श्वनाथ विद्याश्रम की ओर से विशिष्ट विद्वानों को आमंत्रित करके यूनिवर्सिटी में व्याख्यान दिलवाने का प्रबन्ध भी किया है। वे व्याख्यान संस्था द्वारा प्रकाशित भी होते हैं। जैन साहित्य निर्माण योजना समिति के नाम से पार्श्वनाथविद्याश्रम ने डा० वासुदेवशरण की अध्यक्षता में एक समिति कायम की है। यह समिति जैन साहित्य के इतिहास के निर्माण में विविधि विषय के विद्वानों के सहकार से दत्तचित्त है। यह इतिहास ३००० पृष्ठों का होगा और म० महावीर से लेकर आधुनिक काल तक जो विविध विषय का महत्त्वपूर्ण साहित्य जैनाचार्यों ने लिखा है उसका विवरण उसमें दिया जायेगा। चार खण्डों में संपन्न होने वाले इस बृहत्काय इतिहास का मुद्रण कार्य ई० १९५९ में प्रारम्भ हो जायेगा।

आश्रम म शतावधानी रत्नचन्द्र पुस्तकालय है जिससे ६००० से भी अधिक पुस्तकें भारतीय और विदेशी धर्म और दर्शन, इतिहास और समाज शास्त्र आदि विषय की संगृहीत की गई हैं। और प्रत्यके वर्ष में इसमें वृद्धि की जाती है। यह पुस्तकालय सब के लिए खुला है।

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श्रमण नाम की एक मासिक पत्रिका भी प्रकाशित होती है ।

## जैन कल्चरल रिसर्च सोसायटी

हिन्दूयुनिवर्सिटी के पोलिटिक्स के भूतपूर्व प्रोफेसर डा० बूलचन्द्र जी के सत्प्रयत्न से १९४६ में पं० सुखलाल जी आदि ने मिलकर जैनकल्चरल रिसर्च सोसायटी की स्थापना की थी। यह संस्था यूनिवर्सिटी में पी० एच० डी० की डिग्री के लिए संशोधन करने वाले छात्रों को यदि वे जैन धर्म या दर्शन से संबद्ध किसी विषय को लेते हैं तो फेलोशिप देकर उनको प्रोत्साहन देती है। तथा असांप्रदायिक दृष्टि से लिखे गये संशोधनात्मक और मौलिक साहित्य को प्रकाशित भी करती है। अब तक छोटी पत्रिकाओं के रूप में इस संस्था द्वारा ३० निवन्धों का प्रकाशन हुआ है तथा छोटी वड़ी १३ पुस्तकें भी प्रकाशित की गई हैं जिनमें डि० लिट् डिग्री के लिए लिखा गया महानिबंध भी शामिल हैं। इसके अतिरिक्त विद्वानों को आमंत्रित करके यूनिवर्सिटी में व्याख्यानों का आयोजन भी किया जाता है।

## प्राकृत टेक्स्ट सोसायटी

जैन आचार्यों द्वारा लिखा गया प्राकृत भाषा का साहित्य भारतीय संस्कृति के अध्येताओं के लिये बहुमूल्य सामग्री से संपन्न है। किन्तु आधुनिक पद्धति से संशोधित होकर उसका शतांश भी प्रकाशित नहीं हुआ है। इस कमी को दूर करने की दृष्टि से राष्ट्रपति डा० राजेन्द्रप्रसाद जी के सत्प्रयत्न से ई० १९५३ में प्राकृत टेक्स्ट सोसायटी की स्थापना नई दिल्ली में हुई थी। और इसके प्रथम अध्यक्ष हिन्दू यूनिवर्सिटी के कुलपति आचार्य नरेन्द्रदेव थे। उनके निधन के बाद कुछ समय तक श्री डा० भगवानदास अध्यक्ष रहे। और अब उस सोसायटी का कार्यालय बनारस में ही आ गया है ओर उसके अध्यक्ष हिन्दू यूनिवर्सिटी के कुलपति श्री डा० वेणीशंकर झा हैं।

सोसायटी द्वारा हाल में ही "अंगविज्जा नामक ग्रन्थ प्रकाशित हुआ है। यह ग्रन्थ तो ज्यौतिष विषय से संबद्ध है किन्तु यह भारतीय प्राचीन संस्कृति के अध्येताओं के लिये विविध विषय की सामग्री का भंडार है। वस्त्र, पात्र, नौका, प्राचीन मुद्रा, शिल्प, स्थापत्य आदि से संबद्ध नामों की सूचियाँ इसमें जो दी गई हैं वे अन्यत्र दुर्लभ हैं।

सोसायटी द्वारा शीघ्र ही प्रकाशित होने वाले अन्य गन्थ ये हैं—पउमचरिय, चउपन्न-महापुरसचरिय, प्राकृतपैङ्गलम्, सूत्रकृतांग चूर्णि और दशवैकालिक चूर्णि आदि।

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# ज्योतिष सम्बन्धी एक महत्त्वपूर्ण दृष्टिकोण

पीलीभीत
रविवार २७-७-१९५८ ई०

प्रिय……

सप्रेम हरिस्मरण-सादर अभिवादन-कृपा पत्र मिला-एतदर्थ धन्यवाद। ज्योतिष सम्बन्धी मेरे दृष्टिकोण से आप जैसे विद्वान प्रभावित हो सके हैं, यह ज्ञात करके मुझको अत्यन्त हर्ष व सन्तोष हुआ। विक्टर ह्यूगो का कथन God makes His will visible through Events पूर्णतया सत्य है। परन्तु मैं तो इसको दूसरे अर्थ में रखना चाहता हूँ। God makes "Himself" visible through Events (By "Himself" I mean the Nirākāra)

हमारा मन निरन्तर किसी न किसी घटना (Events) को ही सोचा करता है। अमुक मुकदमा जीत जाएं। लाटरी निकल आए। मोटर मिल जाए। अमुक का नाश हो जाए। अमुक स्त्री सुन्दर है मिल जाए। पुत्र विद्वान हो। धनवान हो। सुन्दर मिले। आम खाने का मिले। अमुक व्यक्ति को फांसा जाए। उसके धन अथवा शक्ति का अपहरण किस किस प्रकार हो। अमुक बात हो जाए तो अच्छा है। बुरा है। आदि २। यह सब घटनाएँ ही तो हैं। जो कुछ भी हम सोचते रहते हैं अथवा कर्म करते रहते हैं वह सब एक अटूट जंजीर है कि जिसकी प्रत्येक कड़ी कोई न कोई घटना होती है और ऐसी प्रत्येक कड़ी अर्थात् घटना की उत्पत्ति सत्, रज व तम इन तीनों में से किसी एक गुण पर अवलम्बित होती है। इन घटनाओं के गुण व स्वभाव के अनुकूल वातावरण बनता रहता है। जैसे २ घटनाएँ भूत में विलीन होती जाती हैं तैसे २ वातावरण भी बदलता रहता है। प्रत्येक घटना में निहित शक्ति (Effect) छिपी रहती है जिसके बल द्वारा घटनाओं के साथ २ वातावरण का रूप भी हमको बदलता दिखाई देता रहता है।

हमारे मन पर सत, रज व तम गुणों का प्रभाव निरंतर बना रहता है और भाग्य में लिखित या यह कहिए कि भगवान के निश्चित विधानानुकूल कर्मफल द्वारा प्रेरित उन्हीं तीनों गुणों के अधीन भावनाएँ जाग्रत होती हैं और ऐसी प्रत्येक भावना अपने स्थान पर एक घटना ही बन जाती है और प्रत्येक घटना सत, रज, तम इनमें से किसी भी गुण के समय समय पर जाग्रत होते रहने से ही मन में स्थान बनाती है। इस प्रकार हमारा मन घटनाचक्र में निरन्तर फँसे रहने के अतिरिक्त और कुछ भी नहीं कर सकता। ज्योतिष के अध्ययन से हम इस घटना चक्र के अस्तित्व को समझ पाते हैं। कारण कि हमारा दृष्टि कोण (perspective) उसको पहिचानने व समझने के योग्य बन जाता है। एकबार घटना चक्र को समझ लेने के बाद धीरे धीरे उससे मोह भी छूटता जाता है और अन्त में

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निराकार का साक्षात होकर सम दृष्टि का उदय होता है। जब मूलाधार घटना का अस्तित्व समझ में आ जाता है और उसपर मन केन्द्रभूत हो जाता है तब ही निराकार शक्ति का अनुभव होता है। घटनाचक्र जो भाग्य का पर्याय है सिनेमा रील के अनुरूप कहा जा सकता है। इस रील का कोई अंश तो तोड़कर पृथक देखा जाए तो किसी में हाथ टंगा हुआ दिखाई देगा तो किसी दूसरे में टाँग या शिर लटके ही स्थिर दिखाई देंगे। इसका अनुभव हमको बीच में रील रुक जाने पर होता है। जब बिजली की शक्ति द्वारा यह रील निरन्तर चलती रहती है तो पूरा दृश्य ही उन्हीं सब अंशों के साथ साथ चलने पर समान रूप से दिखाई देता है। ज्योतिष द्वारा हम इस रील के मूलाधार अंश को पहिचानने में समर्थ होते हैं और फिर भाग्यरूपी दृश्य में निहित घटनाओं की रील को भी समझ पाते हैं और इसके साथ २ बिजली अर्थात् निराकार की शक्ति का भी अनुभव लेते हैं।

उपरोक्त पृष्ठ भूमि के अंतर्गत कुछ दृष्टान्त देकर अपना दृष्टिकोण आप जैसे महान् विद्वान के समक्ष रखकर उस पर विचार करने का आप से अनुरोध करना चाहता हूं। हम पत्थर की मूर्ति (चाहे वह किसी भी रूप में हो) की पूजा करते हैं। ऐसे पत्थर अनगिनित संख्या में चारों ओर फैले पड़े रहते हैं। दूकानदारों की दूकानों पर उन पर रूप बना भी मिलता है। परन्तु उनमें से किसी को भी नहीं पूजते। जिस पत्थर को हम पूजते हैं जैसे पीपल के नीचे के महादेव वह जैसे "पैदा" हुए वैसे ही अन्त तक बने रहे, यद्यपि हम उसकी पूजा करते रहें, जल चढ़ाते रहें, फूल चन्दन आदि से सत्कार करते रहें। विचार करने से ज्ञात हुआ कि इस पूजा करने का कारण (Cause) उस पत्थर की प्रतिष्ठा की रस्म (Ceremony) है जो मंत्रों द्वारा नियमानुकल अदा की जाती है। अतः प्रतिष्ठा स्वयं एक मौलिक घटना है कि जिसके फल स्वरूप हम पूजा करने निमित्त उस पत्थर की ओर आकर्षित हैं। घटना (Event) प्रतिष्ठा बनी और उसमें निहित शक्ति (Effect) का फल पूजा करना बन गया। पूजा करना भी एक घटना है जिसमें निहित शक्ति का फल मानसिक शान्ति है। मानसिक शान्ति भी एक घटना (Event) है जिसकी शक्ति के अंतर्गत सतोगुण की उत्पत्ति होती है। सतोगुण की उत्पक्ति चाहे कितनी भी सूक्ष्म मात्रा में हो एक घटना (Event) है जिसकी शक्ति (Effect) के फल स्वरूप अन्य घटनाएं बनती बिगड़ती रहती हैं। दूसरा दृष्टान्त लीजिए। कोई भी लड़का या लड़की अपने अपने स्थान पर स्वतंत्र अस्तित्व रखता है परन्तु "भांवर" (फेरे) पड़ने पर पति पत्नी बन जाते हैं। 'भांवर' (फेरे) की घटना में निहित शक्ति (Effect) के फल स्वरूप एक नया रिश्ता पैदा हो जाता है। भांवर (फेरे) की घटना घटित होने से पूर्व दोनों अपने अपने स्थान पर स्वतंत्र थे। तीसरा दृष्टान्त और लीजिए। मस्जिद में नमाज़ पढ़ी जाती है। इसी लिए उस स्थान को पवित्र माना जाता है। यदि लोग उस इमारत में नमाज़ न पढ़े तो उसको कोई विशेष महत्व प्राप्त नहीं होगा। नमाज़ पढ़े जाने की घटना के आधार पर उस इमारत को पवित्रता का महत्व मिला।

उपरोक्त तीनों दृष्टान्तों में 'प्रतिष्ठा' व 'भांवर' (फेरे) व नमाज पढ़ने की घटनाएं ही मेरी दृष्टि में परमात्मा का साकार स्वरूप है। हम पत्थर की पूजा करते दिखाई देते



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हैं और वही समझते भी हैं परन्तु वास्तव में हम 'प्रतिष्ठा' की घटना की पूजा करते हैं न कि पत्थर की। इसी तरह विवाह सम्बन्ध में 'भांवर' ही मुख्यतम है। पति पत्नी का रिश्ता तो बाद में आता है। इसी तरह 'नमाज पढ़े जाने' की घटना ही परमात्मा का साकार स्वरूप है न कि वह इमारत कि जिसमें उसको पढ़ा जाता है। अपने मोह व अज्ञान के अंधकार में हम इन मौलिक घटनाओं को उपेक्षित करके फल से ही अपने को सम्बद्ध करते हैं। ज्योतिष द्वारा हम इन घटनाओं के महत्व को समझ पाते हैं और उसमें निहित शक्ति (Effect) का अनुभव कर सकते हैं। यही शक्ति (Effect) निराकार है जो प्रत्येक घटना में समानरूप से व्यक्त होती है और प्रत्येक घटना (Event) परमात्मा का साकार स्वरूप है जो सत, रज, तम इन तीनों गुणें के सम्पर्क से बनता बिगड़ता रहता है। प्रत्येक घटना को साकार रूप में अनुभव करते ही परमात्मा के विराट स्वरूप का साक्षात हो जाता है।

इस विषय का दूसरा पहलू भी एक और दृष्टान्त से समझिए। मैं आप से मिलने के लिए वाराणसी जाऊं। स्नेह से ओत-प्रोत होकर मिलने की आकांक्षा पूरी करूं। मिलने पर आप मुझको थप्पड़ मार दें। गाली दे दें। मेरा जाना व आपका दुर्व्यवहार यह सब घटना होती है। इसमें निहित शक्ति (Effect) के फलस्वरूप मेरा आप से वैर हो जाएगा। यही नया रिश्ता बन गया। इसके आधीन अनेकों अन्य घटनाएं भी जीवन में घटित होती रहेंगी। उनको छोड़िए। दुर्व्यवहार की घटना में निहित शक्ति द्वारा बैरी का रिश्ता बनना अपने स्थान पर एक घटना है। आपके पास कोई भी अपरिचित आ जाए। प्रभावित होकर आप उसका काम कर दें। उस व्यक्ति का आप तक पहुँचना स्वयं एक घटना है। आपका प्रभावित होना उस घटना के अंतर्गत शक्ति (Effect) का खेल है और फलस्वरूप उसका काम बनना भी एक घटना है। तथा उस व्यक्ति का रिश्ता आप से मैत्री का बनना भी एक घटना है कि जिसके अंतर्गत अनेकों अन्य घटनाएं घटित हो सकती हैं। इन प्रत्येक बातों को हम घटना नहीं समझ पाते उसमें निहित शक्ति को पहिचानने में असमर्थ हैं। इन घटनाओं का तात्कालिक फल ही हम देख पाते हैं और उस फल को ही ईश्वर मान बैठते हैं। जितनी पुस्तकें लिखी गई हैं या जो लिखी जा रही हैं उन सब में केवल घटनाओं का ही वर्णन अथवा विवेचन होता है अथवा दृष्टिकोण व विचारों के संघर्ष का बखान होता है जो स्वयं एक घटना चक्र का स्वरूपग्रहण कर लेती हैं। ज्योतिष द्वारा हम इन सब घटनाओं में निहित मूल शक्ति का अनुभव कर पाते हैं और वहीं निराकार से साक्षात होता है।

मेरी दृष्टि में फलित ज्योतिष (Predictive Astrology) केवल उसका एक अंग है जैसे शकर के साथ शीरा। वास्तविक आधार ज्योतिष का निराकार से साक्षात होना है। ज्योतिष न तो कोई धर्म है और न फिलासोफी। ज्योतिष न तो केवल ज्योति ईश के अर्थ में ईश्वर की ज्योति को समझने व उसका अनुभव कराने के निमित्त हमारे ऋषियों की देन है। ऐसा मेरा दृष्टिकोण बन चुका है। एक और भी मार्मिक बात आप के समक्ष प्रस्तुत करने का साहस करता हूँ। आप जानते हैं कि Line has no thickness or breadth

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of its own and that it is made up of dots. ज्योतिष द्वारा हम इस रेखा के मूलाधार बिन्दु (dot) को देख लेते हैं। इसके देखते ही समस्त रेखा का अस्तित्व लोप हो जाता है। आप यह भी जानते हैं कि matter is made up of particles and likewise human existence is entirely an assembboge of cells. ज्योतिष द्वारा इस मूल particle या cell को पहिचान लेते हैं। यही निराकार है जिसको Embryo of life कहा जाना उचित होगा। शेष शरीर अथवा रेखा साकार स्वरूप हो जाता है। प्रत्येक चित्र अथवा कोई भी लेख अनेकों रेखाओं का समूह ही तो होता है। यदि हम जान जाएं कि उस चित्र अथवा लेख का मूलाधार केवल एक अदृश्य बिन्दु है तो फिर चित्र ही सामने से लोप हो जाता है। यही बिन्दु निराकार है। इसी प्रकार भाग्य या घटना चक्र में निहित मूलाधार बिन्दु अर्थात् घटना (Event) के अस्तित्व को समझने पर समस्त दृश्य के अन्तर्गत घटनाओं का पुंज भी हम देख सकते हैं और निराकार की विद्युत का प्रयोग करके उस दृश्य को चलते हुए भी अनुभव कर सकते हैं।

फलित ज्योतिष शास्त्र द्वारा व्यक्ति के अस्तित्व से सम्बद्ध घटनाओं का दिग्दर्शन प्राप्त होता है जिसे भाग्य कहते हैं। यह भाग्यरूपी घटनाओं का पुंज अदृश्य रहता है परन्तु उसका साकार स्वरूप व्यक्ति का शरीर होता है। भाग्य की घटनाओं के अनुकूल ही शरीर व स्वभाव बनता है जिन्हें वातावरण Environments कहते हैं। कालचक्र पर घटनाएं घटित होती रहती हैं और इन घटनाओं के साथ वातावरण भी बनता बिगड़ता रहता है। अपने कर्मफल के अनुसार जितनी २ मात्रा में सत, रज, तम गुणों की प्राप्ति से भाग्य अर्थात् घटना चक्र का निर्माण होता है उसके अनुकूल जीवन में घटनाएं घटित होती रहती हैं। काल चक्र पर जब भी जिस गुण का प्रादुर्भाव होना निश्चित होगा वैसी ही घटना भी घटित होती रहेगी। आशय यह है कि ये तीनों गुण अपना अपना प्रभाव घटनाओं के रूप में प्रदर्शित करते रहते हैं जो दैवी विधान के अन्तर्गत ही नियत व निश्चित रहते हैं और इसी प्रगति को हम कहते हैं कि भगवान अपनी इच्छा को घटनाओं द्वारा व्यक्त करता है अर्थात् God makes His will visible through Events. चूंकि इन घटनाओं में निराकार की शक्ति (Effect) को ही मूल तत्व मैं मानता हूं और उसी को देखपाता हूं इसी कारण मेरा कथन है कि God makes himself visible through Events, क्योंकि मेरी दृष्टि में भगवान की इच्छा (Will) का सम्बध कर्मफल से है अथवा उसके निश्चित विधान से है कि किस प्रकार के कर्म का कब और क्या फल प्राणी को मिलना चाहिए। घटना (Event) तो फल है और उस फल को देने की शक्ति उसी घटना में निहित है।

अब प्रश्न यह रह जाता है कि मेरे वाराणसी जाने पर आपका दुर्व्यवहार अथवा अपरिचित के प्रति आपकी कृपा आदि भुक्त कर्म का फल है अथवा स्वतंत्र कर्म। मेरी दृष्टि में दुर्व्यवहार की घटना भुक्त फल पूर्व जन्म के संस्कार वश होना है और अपरिचित पर कृपा आपका स्वतंत्र कर्म कहा जा सकता है। इस चक्कर में पड़ना भी व्यर्थ है। मैं तो केवल निराकार का साक्षात्कार ही प्रत्येक घटना में होना महत्वपूर्ण समझता हूँ।

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घटना का कारण अथवा भावी फल को सोचना व्यर्थ है, यद्यपि उसका विधान भी निश्चित ही है। निराकार का साक्षात व अनुभव होते ही सब बंधनों से मुक्ति मिल जाती है जैसे मज़हब, जाति, वर्ण, ऊँचा, नीचा, अमीर, गरीब, प्रान्तीयता, देशीयता आदि सब इस तरह लोप हो जाता है जैसे प्रकाश के उदय से अंधकार। मैं समझता हूं कि इन सब बन्धनों से मुक्त होना ही व्यक्ति की मोक्ष है।

आप विद्वान हैं। आप का बहुत गहरा अध्ययन है। अपना विचार मैंने टूटी फूटी भाषा में आप की सेवा में प्रस्तुत किया है। इसके तथ्य को आप भली प्रकार निकालने में समर्थ हैं। मेरा यह लेख भी एक घटना है कि जिसकी उत्पत्ति आप के पोस्टकार्ड में आप का प्रभावित होना लिखे रहने में निहित है। आप के उस लेख को घटना मानना होगी जिसकी शक्ति (Effect) के फलस्वरूप मैंने यह अपना लेख आप की सेवा में प्रस्तुत किया। मेरे इस लेख की घटना में निहित शक्ति (Effect) का फल यह भी हो सकता है कि इस सब को आप एक मूर्ख की गाथा समझ कर फाड़ कर फेंक दें। दूसरे यह भी हो सकता है कि तथ्य को समझ कर अपना कोई विद्वतापूर्ण लेख हिन्दी में लिखकर प्रकाशित करें। इन में से कोई भी घटना घटित हो, यह निश्चित है कि उस घटना के अंतर्गत आगे न मालूम कौन कौन सी घटनाएं अपना अपना चमत्कार दिखाएं।

सस्नेह

**शिवशरण**

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# THE WASTE LAND

G. D. SHASTRI,
*B. H. U.*

( 1 )

## INTRODUCTORY

The difficulty of *the Waste Land* is obvious ; and to understand the poem, one has to understand something of the recent changes in technique of modern poetry, and to familiarise oneself with Eliot's use of symbolist imagery in particular. It must be conceded that the inherent difficulty of this or other similar poems does not arise out of any wilful perversity on the part of the poet to be incomprehensible. We must accept, even if we do not like, the fact that there has come a change in the meaning of poetry itself, that is responsible for all this bewilderment of the reader. The truth is that the poet does not pursue the old path of direct communication any longer, i.e. he does not let himself 'go'. Poetry for him is not turning emotion loose. Rather, he wishes to escape from it. How does he do it ?

The classicist's purpose was simple. He tried to correspond his statement with something that had a concrete reality elsewhere outside his mind. He tried to be objective and direct in his assertions. Eliot accepts the principle of objective presentation, but only partially. He does regard art as objective and impersonal, as *the rendering of what is inside of poet's mind in an impersonal manner.* The classicist, on the other hand, looked out and tried to square his communication with the reality of the external fact. Herein lay his strength. The modern poet tries to project his mood, and yet is not romantic. He eschews to be personal or emotional. And not only this, he shifts emphasis from content to form, from communicated matter to language. It is here that objective impersonality comes in. In expression, he tries to be as precise in his tokens of thought as possible. He thus tries symbolist imagery for purposes of self expression. Words are used not merely for communication but for revealing the processes of the imagined mood, and this too, in a new way, i.e. through suggestion thrown out in a manner so as to awaken that same idea in the reader's mind. It is the function of language that is at the bottom of the problem.

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Eliot's use of symbolist language raises a fundamental question about its function, and indirectly of what poetry is. The first, i.e. symbolist imagery, is the basic element of this poetry. What is the function of word ? It is to stand for an idea which is a mental fact. All words are tokens of abstract concepts. Words are used to communicate thought from one mind to another. In a fundamental sense, all words are symbols. But when we speak of symbolist imagery we do not look upon words as complete or perfect counters of thought. The speech is regarded as imperfect in its nature, and words have to carry an extra burden of meaning to do full justice to the poet's communication. And herein comes the symbolist's significance of word. Not its primary, but its implied sense, becomes its real purpose.

Eliot follows the natural reaction of his day in regard to romantic expressionism. At his hand the word is equated with the sense, and a hard, correct and precise picture of idea is sought to be conveyed through imagery. In this task accumulated storage of centuries of literary usage is pressed into service, and a highly developed diction is evolved, which is at the same time very close to every day cultivated speech. Poetic language and every day speech have had their advocates in poetry, and the question of their relative value can never be finally resolved. Poetry is 'Significant' statement, and words are used in a 'Significant' manner by all great poets. It is the imagery making the statement, the combination of words acting as a 'flash' on mind, that always constitutes the basic stratum of poetry. Through his language the poet seeks contact with the world at large, and, how-so-ever words might be used, there must be communication from the poet to his reader. The traditional way had been either descriptive or narrative, whether subjectively or objectively employed. All poets in the past from Homer to Hopkins communicated. They described or recounted, carrying forward from point to point their feelings or thoughts, or whatever they had to state. It was, even when most complicated, a simple logical affair. But the modern poet, for reasons which are the results of natural growth of poetic diction as also of new development in knowledge of psychology, discards the direct method of thought conveyance for the indirect and implied mode of mind revelation. In doing so, he feels not only the attraction of novelty but enjoys the satisfaction of change in place of the hackneyed methods of art. The symbolist prefers to flash his meaning by means of dissociative imagery, utilising his knowledge of literature and psychology, and is content to be vaguer rather than be explicitly conventional.

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The difficulty inherent in such a projection of meaning by indirect implication is too obvious, and no penetration into the sense embodied in imagery is possible without tracing the verbal token to its source, if any, or to the psychic back-ground implicit in the statement made. All this, to say the least, is a very tortuous mode of communication, but it does offer an interesting and invigorating contrast to the leisurely and sumptuous display of verbal rhetoric so fancied by romantic poets. The main hurdle in the way of the reader in dealing with symbolist poetry of this kind is two fold: (1) He must be able to collocate the passages to their issuing fountains, and thus put a meaning into them arising out of such association; (2) and he must tune himself with the mood of the speaker (in the poem), that is, put himself, if he can, in the same position as the protagonist to understand fully the shifts in meaning and the innuendoes, suggestions, and all implied thrusts, so subtly and cleverly packed by the poet in his words. Now, neither of these positions is easy to attain. Hence Eliot can be understood only with the help of Exegetists or interpreters. It is an open question whether too much dependance on extra help is any good thing for poetry. But, whether good or bad, the difficulty being there, the only way to get over it is to take the help from those who have gone over the same track before and have found their way. However, it does not require any long argument to show that poetry loses its main attraction by being put into 'Cold Storage' of verbal incomprehensibility. If modern poetry chooses to hide itself in not very-easy-to-understand terminology, it is not doing any good service to itself. But except for extremism in surrealistic or symbolist expressionism in certain cases, it cannot be said that the entire bulk of current poetry suffers from any such kind of 'perverted' pedantry. Much of it is only a natural reaction to the other extreme of romantic verbosity and rhetorical affluence affected by earlier poets, and is the result of the desire to be concise, precise and to the point in objective presentation of the poetic idea. The Tennysonian or Swinburnean gusto for music and rhetoric was being discarded for a direct forthright utterance in which the prolific exuberance of feeling was to be recast in a mould of imagist expressionism.

The attractiveness of Eliot's diction, therefore, lies in his clear-cut imagist presentation of idea—the ease and economy of utterance and the use of what must be admitted is the nearest equivalent of the spoken idiom. The language has once again come back to levels of current conversation, and poetry does not plume itself with verbal feathers borrowed from outside the pale of daily speech. The difficulty, therefore, that the reader

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faces, is due to the manner and purpose of this word-usage. In the first place the words yield a surface meaning that must be reinterpreted to be acceptable as sense; and in the second, in order to do so, the source, or the necesssity of the expression employed must be found out to get into any kind of coherence of idea. Unless this is done, the whole utterance seems to be irrelevant and devoid of logic. This apparent lack of surface meaning forces attention back to the innate purpose of the statement, and in doing so, the reader begins to find the implied and suggested meaning of the poem. This can be done with some effort on the reader's part, if he can grasp the poet's method of work. However, the labour involved in the task is not light, and though the novelty and crystal purity of Eliot's diction are in themselves a matter of pleasure, the unnecessary ambiguity or vagueness of utterance is a painful tax on the reader's patience and love of poetry.

( 2 )

"*The Waste Land*' is the most notable single poem of our time. But it has serious defects inherent in its origin and its method. Mr. Eliot's attempt at rectifying the divorce between intelligence and sensibility fails by the remoteness of much of his material. In a word, *The Waste Land* does not carry within itself all that is necessary for understanding. Its structural basis lies in a specialised branch of learning, and it involves continual reference to other branches of knowledge with which few readers can be acquainted. The piece is not a self-contained entity. Despite its great influence, therefore, it is not Mr. Eliots most successful poem. That title I should give to the *Four Quartets*" Bullough.

To understand it then we must seek every aid that can initiate us into the mystery of its meaning. First then its plan :—

It consists of five parts and each part bears a sub-title. The poem is prefaced with an epigraph taken over from Petronius and is in Latin. The importance of such casual references to a past literary source can hardly be overrated in the correct appraisal of Eliot's meaning. It can be regarded as a main key to the deciphering of his code language. The words are the sibyl's, and their meaning, at once so striking and downright, strikes the keynote of the whole poem. Like the sibyl the people of *The Waste Land* suffer from lack of any incentive to live. They prefer death. The title of the poem, is no less significant. Surely it means more than a mere name. It is symbolical. Anthropological studies of Miss Jessie L. Weston (From Ritual to Romance) have thrown a new light on the old legend of the Holy

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Grail that originated in a fertility cult of Thammuz and Adonis. The old story tells us of how a questing knight saved the Waste Land, the country of the Fisher king, from drought caused by a curse. The knight in the story had to understake an arduous journey to the Chapel Perilous, and there find answers to certain questions. His efforts were crowned with success and the Waste Land once more was restored to happiness and prosperity.

The poem is an application of this story to modern society and civilization. Our civilization is too perilously like the Waste Land. We have lost all vitality, youth and vigour, for we are guilty of the same sex frenzy that turned the old country into an accursed land. And in our case too the same spiritual tests will have to be complied with before we can obtain our own salvation.

The parts from one to five symbolise the story in their own several ways. Part One is the most significantly named. It is called the Burial of the Dead. No resurrection is possible without death. In the case of the world too, the burial of the dead must precede the process of its spiritual rebirth. This section emphasises the inevitable dissolution that must take place before there can be any new life. It is a lament over the loss of some vital principle of life and in this way illustrates the utter demoralization and decay of modern society by reproducing typical chatter of metropolitan idlers. By repeated use of symbols suggestive of decay and barrenness, such as *'a heap of broken images' etc.*, the fact is brought home that this kind of existence is no real living. It is only a kind of death. In this decayed society, even love so attractive to a sex-ridden people, fails to revive and galvanise them; and there is nothing that they do not degrade and misuse. The need, therefore, is to bury this dead civilization, and to see that this burial is complete and is not frustrated and negatived in any way.

Part Two is called *A Game of Chess*, and is a reminder to the reader of the sinister game played in Middleton's *Women Beware Women*, where under its cover an attempt was made to violate the chastity of Bianca. The title, therefore, serves the purpose of stream-lining the huge hoax of modern society whereby it welters in sexual orgies in the name of civilization. Two types of modern women drawn from high and low levels and presented in contrasted literary styles, spotlight the picture of this rotten world.

Part Three is the *Fire Sermon*, a name derived from a sermon delivered by Lord Buddha, and is at once suggestive of the irresistible power and the



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hold of lust on man; and the devastating fire that burns the human being all the while and from which no man can escape, could not have been better illustrated than by references to the experiences of Augustine and Buddha.

Part Four, briefest in length and called *Death by Drowning*, is symbolical of life's transitoriness and suggestive of the sudden end of all sensuous and licentious living.

And the last section is the way out, and the name has been borrowed from one of the Upanishads. At least for the Indian student its significance lies not only in the source of the title, but also in the recognition of the spiritual message delivered to the world thousands of years ago through the *Brihadaranyak*. The story as given there is the following :—

Once upon a time the Lord Prajapati was approached by all his three children—देव (god), असुर (Demon), मनुष्य (Man). They had been receiving education at the hands of the Father and had undergone a course of discipline and celebacy. Having completed their education they were desirous to know what more was expected of them by the Father. Each of them put the same question to Him and received the same answer, that was nothing but the utterance of the letter 'Da'. And having given his answer in this way Prajapati enquired of each son whether he had understood the meaning, to which each replied 'Yes'. But the word did not, and was not intended to, mean the same thing to each one of them, They severally needed a different kind of discipline—The Devas needed self control, the Asuras needed to be more merciful, while man needed to be more charitable and less greedy. Thus the triple advice tendered by Prajapati to his three sons was according to their greatest need and constitutes the triple base of our own immortality. No regeneration of man is possible without the observance in life of these basic rules—Control of the senses, Mercy and Charity.

This anecdote under-lines the greatest need of present day humanity-which is nothing else than turning away from lust, cruelty and greed. In short, *The Waste Land* closes on the note struck by the Gita :—

त्रिविधं नरकस्येदं द्वारं नाशनमात्मनः। कामः क्रोधस्तथा लोभस्तस्मादेतत् त्रयं त्यजेत् ॥

( 3 )

Its publication in 1922 was not without its own sinister irony. The first world war was over, but its termination had not ushered in the new heaven

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that politicians and patroits had promised and died for. On the other hand, every moral and spiritual value that the people had prized seemed to have been discarded. *The Waste Land* is the poet's reaction to this sordid dehumanization of European countries.

Of this poem, Eliot wrote, "It was in 1922 that I placed before him (Ezra Pound) in Paris the manuscript of a sprawling chaotic poem called *the Waste Land* which left his hands, reduced to about half its size, in the form in which it appears in print. I should like to think that the manuscript with the suppressed passages had disappeared irrevocably; yet, or the other hand, I should wish the blue pencilling on it to be preserved as irrefutable evidence of Pound's critical genius."

The excision of *The Waste Land* to half its length must have affected, so one likes to think, its coherence and intelligibility, though as the poet himself admits, it resulted in improvement otherwise. The modern reader, therefore, is faced with the almost insuperable difficulty of getting behind the mind of the poet, a no easy thing indeed. To the reader not initiated into the technique of the poet three difficulties stand out prominently. First, the disjointed nature of the statements made; secondly, the overt and subtle allusions sprinkling all over the lines; and thirdly, the symbolic ideography of the poem. The first and the last deal with the modern aspect of poetry; and the second flows as a consequence of this technique and is also to be regarded as a trait of Eliot's scholarly individuality. But the three go together and any semantic analysis of the poem must remove all these difficulties from before the path of the reader.

( 4 )

Any view of modern poetry must take into account (1) Increasing volume of knowledge and rising intellectual level of society, (2) expanding flexibility and capacity of language, and (3) mounting complexity of life. Poetry has always been primarily an aesthetic exercise of words with the hoariest traditions behind it. It is easily the first of human endeavours and thus has a continuity as old as civilization itself. Poetry has a past as it also possessess a present; and they are not always alike. In fact, modern poetry seems to pursue aims and objects at variance with old traditions and thus strike out a new path.

First, this fact has to be recognised, and only then has to be explained. Explanation need not, however, nean necessarily justification; but it will

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help in understanding the current phase in poetry. It appears to be incoherent and incomprehensible. On the face of it there is rapid transition of thought in poetic articulation that lacks not only internal links but also logical synthesis, to which we have been accustomed so long. And this mode of poetic expressionism, natural though it might appear in the background of subjective independence exercised by the poet in ever an increasing manner from the time of the romantic upsurge, has been carried to the utmost limits of arbitrary self expression, between which and the reader's preceptive apparatus there seems to be no contact. All this is due to the change in poet's attitude to the instrument of articulation and his concept of his own functional duty. It is the second factor that presents the most formidable barrier to the understanding of poetry, particularly surrealistic. As regards the first, it can be readily admitted that in the course of English poetry a progressive enrichment, flexibility, variability of expression is noticeable all through. But with regard to the use of language, each and every poet in the past, to whatever period he might belong, has had the same attitude, namely as an instrument of mutual communication. It is not for itself that language is used. It is only the lifting away of the curtain from over the mind of the poet that the language should help. Any difficulty remaining in the process might well be due to the texture of thought conveyed. But in the language of the modern poets it does not seem that their main purpose is to communicate. On the other hand, language and imagery become not instruments of thought but photocopies of thought process. In stead of talking to his readers the poet seems to muse with himself—engaged in an attempt to reveal the state of his mind. And here the change has come. Psychology has broadened the scope, range and extent of our knowledge of human consciousness. by linking it with the sub-conscious and unconscious portions of mind. We do not regard the focal point of consciousness as all in all. Rather, the stress is laid on the subconscious, or the hidden self. Naturally, the present day poet makes use of this psychological fact. Apart from the question whether this be the right or wrong end of the stick to present to the reader, the fact that the poet is more concerned with subjective awareness and its manifestation in downright manner has to be borne in mind. The poet of today has (1) a different approach to language, (2) a different attitude to life, and (3) a different purpose in writing.

It is no longer the question of poetic diction only; the enlargement of vocabulary and widening of knowledge are there. The poet has a larger

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verbal fund to draw upon ; he is no longer rooted to approved or accepted phraseology. This was the usual way. Each poet in every generation had this question of choice of diction to face, and he took his own line, which though seemingly his own was not fundamentally different from the basic pattern and mould of thought-expression. But the present day poet has not only started picking his imagery and symbols from newer avenues and fields of knowledge, he has not only widened the field of his observation and choice, but he has also introduced a new change in writing. He is tending to be introvert in the use of language. This is the basic symptom of modern poetry ; and this is the experjment carried out by Mr. Eliot in *the Waste Land*.

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# PLACE OF RARE BOOKS IN A UNIVERSITY LIBRARY

JAGDISH SARAN SHARMA
*University Librarian.*

Rare, books, which have been defined as "the unexpendable parts of a Library's collection" are segregated from other books in practically all the well known University Libraries of the world. They are important to a University and deserve special care because they can be exhibited for educational purposes and principally, because they provide materials for research activities.

The place of rare books in a University Library actually depends upon the taste, discrimination and feeling of its teachers (including the library staff) as well as upon their intellectual training and erudition. In a university where the teachers are mere scholars, the place of rare books will be relatively low ; in a university where the teachers are man and woman of fine feeling, sentiment, and appreciation, as well as scholars, the place of rare books will be higher. Nothing that we can say by way of opinion, be it expert opinion or mere prejudice, will affect the situation one way or the other. As a military post so often reflects the dominant interest of the commanding officer, so the rare book collection of a university library is apt to reflect, the interests of its librarian if at all he is empowered to select and buy such rare books.

*Importance and Nature of Rare Books :*

Emphasizing the necessity and importance of a rare books collection in a university library Dr. Adams, a wellknown rare book specialist once wrote "The universities are places where, presumably, men and women are taught greater discrimination, how to make distinctions what to regard as evidence, and how to evaluate it, in short, how to tell a counterfeit from the real thing". To illustrate this dictum a teacher may suggest to a student several editions of the same book : a first edition, a first revised edition, the last edition published during the author's life time, the first effort at a critical edition, a popular modern edition, and the latest edition. The student studies all these editions with a view to make a comparative study of a particular problem which is dealt differently in different editions either by the author himself or the commentators. The interesting thing about such a comparative study would be that a student will have to read all

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the editions inorder to reach a particular decision. This kind of study will certainly add to his knowledge and will make him well-versed in doing research. So without having provided a good rare book collection, training in research in a university is almost impossible.

The segregation of rare books from the general collection creates numerous administrative and organizational problems. First of all, the library must determine what materials to treat as rare and should institute procedures to screen the rare items from the general collection and from current acquisitions. But before screening the items a librarian must be fully known to those factors which make a book rare. According to the "Rare book code" of the University of California those books are considered rare which were printed before 1600, have limited edition (300 copies or so), autographed by important authors, have esthetic importance, cost more than Rs. 250/-, have archival value, are in the form of portfolios of loose plates, books, the rare illustrations of which make them subject to mutilation, publications of fragile physical make-up special collections and books with significant manuscript or other materials laid or tipped in.

*Acquisition, Cataloguing and Classification :*

Some university libraries have a special appropriation for rare books, but most libraries buy them out of other appropriations, if they buy them at all. It is recommended by at least one authority that the rare book room should be an independent unit within the university library, doing its own ordering and processing, in order to insure efficient and safe treatment of books. Since the books must be acquisitioned outside the rare book room in most university libraries, great care should be taken that they are not marked, stamped or perforated in the same manner as other books.

Cataloguing of rare books requires attention to detail if they are to be of maximum use to scholars ; in addition to a separate rare book catalogue and shelf-list there should be auxiliary indexes of printers, place, dates or autographs, etc. depending on the reference needs of a particular library.

*Administration :*

The administration of many special collections as units is a problem which can get out of hand if the librarian is not firm with benefactors. For the most part rare book librarians try to adhere to the classification scheme in effect, in the Library as a whole. Authorities agree that a rare book curator or librarian should be a person of superior attainment and varies background. He should have done graduate work in a subject field, must

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have Diploma or Degree in Library Science, and should be well-versed in bibliography. He should also have some experience in book trade. Since Library to-day is a sure media of research and mass education, he must also be able to meet people and promote the interests of his library by making its collection, its facilities and its needs known to the outside world.

Some regulations are needed to protect rare books from the public, although flexibility in their application is also generally recommended by the wiser authorities. Ordinarily it is enough to insist that rare books do not circulate out of the library and that no ink be used in taking notes from them.

*Conditions at Home :*

Like many well known foreign universities, we in India inspite of our rich literary background do not adequately care for our rare books. It has been observed that on the dusty shelves of some of our University Libraries are dumped rare manuscripts and rare books in which are enshrined India's unique literary achievements. But, these rare collections, due to lack of funds and trained personal are of no use as they ougnt to be. If these rare books are properly catalogued, classified, indexed and made available to scholars they can contrilute substantially towards the Literary reconstruction work of our nation. It goes without saying that the role of rare book libraries in our literary national life is constructive. They are mines from which new literary services of national wealth are constantly uncovered. It is on these new sources of our rich literary heritage that the social and cultural future of our independent and united India must rest. Because of this, the encouragement of rare book libraries is worty of serious study by all our educationists in universities and those who are interested in the great future of our country. During the Second Five-Year Plan, we will depend more and more on these new literary sources of wealth discovered by research scholars in universities to supply the means of maintaining and increasing our standard of living —indeed our entire, literary, cultural and social life.

Under the British regime no great encouragement for rare book collections in universities and research institutions was given. Then we were merely passive spectators of events and playthings of others. But, after we became an independednt nation, many responsibilities, including development of research in our universities, have fallen on our shoulders. We have to make India, "the pride of our heart, great among nations, foremost in the art of peace and progress." Now time has come when

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each university, should have its own fully well equipped rare book room for its research workers.

The Banaras Hindu University Library is one of the moderately richer libraries in India so far rare books are concerened. It is needless to emphasize that its special and donated collections include some valuable rare books and manuscripts which need special care. They ought to be safely preserved in an air-conditioned room and should be properly classified and catalogued inorder to make them available to Research Scholars, within the premises of the Library.

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# REFLECTIONS ON READING

*(Continued)*

M. M. DESAI

The choice of books is a difficult one. The world suffers from over production in books. There is too much to read and alas there is too little time to read what one may consider worthwhile reading. One may miss the trees because of the wood. There are bad books, false books, faked books; they are the corrupters of men insidious enemies of society. Books are written by their writers but they are made by their readers. A good book in the hand of a bad reader can become a bad one. Are there not readers of Shakespeare or Kalidas who merely gloat over the aphrodisiac passages from their plays? The reader must come to his auther with an open mind but most readers approach books with biased, blurred or divided mind expecting fiction to be true, poetry to be false, biography to be flattering or debunking and history to be enforcing their own prejudices. This is a wrong approach. Each author has to be approached individually in his own light, in his own way, in his own domain. Jane Austen is different from Hardy, Shakespeare is different from Shaw. There is the proper mood and correct approach needed to read different authors. We read some books to satisfy our curiosity (biographies, autobiographies), some books to satisfy our thirst for knowledge (history, science) some books to satisfy our feelings for beauty of thought and expression (poetry). Again there are books to read when one is ill; there are books to read when one is well; books for the idle hour and books when one's brain is alert and craves for something to grapple with; there are heavy books and light books to suit the mood and the moment.

Every book is not to be read with equal intensity and there are many books which cannot and should not be read with the same intensity. There are books to be borrowed and perused once; there are books to be bought and perused repeatedly. A trained reader must acquire the valuable faculty of skipping. He acquires impressions first with the fullest understanding and then learns to judge, compare and appreciate. Reading must develop imagination, insight and judgment otherwise a book, even a good book, is a bloodless substitute for life. Reading is not the water but the wine of life of the purest vintage when it brings the reader in full communion with the great author. Its enjoyment is the result of a cultivated taste of a connoisseur acquired by personal efforts. Readers are

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not born; they are made and the best of them are self-made. Skilful reading is a faculty to be acquired and not a natural gift.

There are highways and byways in the realm of books. Conducted tours by touts of literature or well-meaning guides cannot give a reader as much delight as the free browsing and leisurely loitering in the land of books. Somerset Mangham in his short story, *The Book-Bag* observes, "Some persons read for instruction, which is praiseworthy and some for pleasure, which is innocent but not a few read from habit and I suppose it is neither innocent nor praiseworthy". With some reading is just a drug and they fly to their books as the opium-smoker flies to his pipe. Again there are professional readers whose lot is not enviable such as reviewers who have got to go through their daily or weekly quota of books. Reading with them is an occupational disease. For them reading is often a drudgery, an onerous and exhausting duty. Professors, research scholars, writers are vocational readers. Some read to think and to stimulate thinking, some to write, some read to talk about their reading some read to kill time. Some read to parade, some to quote other people's thoughts.

One of the perplexing problems of to-day is the vast output of books. The accumulated stocks of books in the world is likely to choke the stream of human culture. There is the remorseless cataract of daily publications. In 1952 a B.B.C. speaker stated that 18000 books were published in England only in 1951. In our time the wilderness of books has grown so enormously that valiant attempts have been made to guide the wayfarer in the world of books. There are many guides, real and spurious but little profitable guidance; neither great writers nor Book Societies, neither publishers nor newspapers have been able to solve satisfactorily the problem of book selection for the individual. In recent year, an American publisher in a characteristically American way sought to take a vote by its readers to decide what may be considered 100 Best Books. This is democracy with a vengeance. Literature is aristocratic not democratic. Greatness of a writer or a work cannot be determined by counting votes. This attempt rested on a fallacy. Literature is so personal in its appeal that no man can dogmatically determine its value for another. There is no positive hierarchy among the classics. Each classic is a work of art in its own right. There is no measuring rod to compare the relative merits of the *Essays of Elia* with *Paradise Lost* or *Pilgrim's Progress* with *Pride and Prejudice*. Further there are moods in which we prefer Mark Twain to the *Rig-Veda*. One man's food is another man's poison in reading matter.

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In modern times man has too much to read and too little time and training in thinking. Einstein correctly asserted "Any man who reads too much and uses his brain too little falls into a lazy habit of thinking". Mere reading does not help mental or spiritual growth of a healthy mind as mere eating does not lead to the growth of a healthy body. Reading must be a nourishment of the mind and not merely stuffiing of the head. Reading must be accompanied by thinking. A superficial thinker sails smoothly on the surface of thought and the superficiality of his mind helps him to do so sleekly buoyed up by the vacuity of his mental makeup. It is easier to learn to read than to learn to think. Real thinking means thinking things out, not thinking them over; thinking things not thinking about them.

Reading is the conventional instrument of education and education is often an acquired colouring and reading often helps to tint the colouring. One can alter an old saying and say "Tell me the books a man is fond of reading and I can tell you what kind of man he is". Unfortunately most reading of the average reader is desultory, purposeless, hasty and naturally it is undigested. Better a single original thought than an encyclopaedia of facts. We have too many books of facts and not many books of ideas. No one has written a book on the infective power of ideas.

Modern man is overwhelmed with too much distractions to cultivate the leisurely art of reading. Most people stop serious reading at 25 or when they have come out of college and they have been sucked in the whirlpool of social and professional duties. Formerly the middle class Victorian family in England took pride in the collection of books it possessed. Nowadays the middle class family in England is eager to spend money on a car, a radio or T. V. set. Books find a place at the bottom of the family budget if they at all find a place in it. Again the Victorian attitude towards life was radically different from the twentieth century man's attitude. The modern man is excessively, hysterically fond of movement; he is listless; he has no poise; he is the slave of speed, excitement, group or mass entertainment in sports and arts. His tastes, his impulses, his loves and hatreds are mass moved. He is afraid to be alone. He is trying to forget himself in noisy distractions. Reading requires relaxation, repose, rest; it is best enjoyed when alone and when left alone. No wonder them that though the modern man enjoys growing mechanical facilities for reading (libraries, cheap publications etc.) and though there is a vast output of books he has very nearly lost the art of reading and deriving benefit from it. In the midst of plenty he is starving.

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Journalism is the great rival and competitor in taking up the time and inclination from reading serious books for the ordinary reader of to-day. "Journalism is literature in hurry" as defined by one great journalist. Journalism by dwelling on the trivial and transitory very often vitiates the taste of the ordinary reader. The journalist appeals to the lowest and most primary instincts of his patrons. It is intended to serve the mere literates—the uneducated, quarter-educated, half-educated or ill-educated. Thoreau when he was forced to read a newspaper averted the effect of the poison by a doze of Herodotus or Strabo.

If journalism has vitiated the taste and standard of reading in modern days the misused art of advertisement and commercialised propoganda have further harmed the reading tastes and habits of the twentieth century men and women. The syndicated puffs of the latest masterpieces in fiction, poetry, drama etc. which like the latest boosted cinema films are over-praised to-day and forgotten to-morrow. With Villou we may exclaim "Ou sont les neiges d'autan ?" (where is the snow of last year ?). Who remembers even the titles of the masterpieces of novels, plays etc. so competantly advertised in America last year ? The deliberate attempts by the modern Philistines and Publicans to standardise and canalise public taste in arts and letters along with excessive output of worthless reading matter and the growth of the literate uneducated and ill-educated are positive dangers to the growth of genuine culture. Nothing so dwarfs the mind and to debauch it by frivolous, pernicious reading as the dram-drinking of sensational rubbish. To-day we are overwhelmed by the chaft of letters. Instead of William Blake Sexton Blake is the food supplied by the cheap weeklies in England, purveyors of popular entertainment for the mere literates. This gives power and money to the press barons and debases the taste of the populance. In America, the dollar-deluged and dollar-deluded land, many people have money to spend on books and their need is supplied by just superficially educated people. An American educational authority asserts that there are more illiterate people who live by their pen in America than the total number of illiterates in other less fortunate. Countries comics and yellow journalism, the tabloid press and commercialised food for the mind supply the American popular reading matter.

To quote from the column of a leading Indian newspaper "Despite the fact that U.S.A. has the highest level of formal education in the world, 'fewer people buy and read books in this nation than in any other modern democracy' according to the gallup survey made recently.

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"For instance, the average Briton reads three times as many books as the average American (Time, July 6). Also, U.S.A. with a population of 150 millions, has 1,450 book stores, 7,500 libraries. Denmark, although it has a population of only 4 millions has 700 book stores, while Sweden (7 millions) 6,500 libraries.

"As for serious reading, 'out of every 20 graduates, only eight could name the author of *Vanity Fair*, only one knew who wrote *Tom Jones*".

In America magazines have greater sales than books and enjoy wider publicity. The sale of *The Reader's Digest* exceeds 13 million copies every month, not counting the numerous foreign editions as well as the editions for the blind, the deaf and the illiterate. The *Reader's Digest* is after the Bible the most widely circulated publication in the world. In Post-War Japan weekly magazines and newspapers are taking the place of the full-size books which the Japanese used to read for their entertainment—a change which one cannot say is a sign of improvement and is perhaps a result of the American occupation of their country and their introduction to the American way of life.

The American edition of the Encyclopaedia Britannica, that treasury of universal knowledge now published in Chicago, has an article on Pittsburgh which is illustrated with three full page photographs of the business district of that industrial city but the article on Leonardo da Vinci has no illustration at all. Art is less important than technology. The tempo of American life eventually turns the human being into a clock and man is made into a machine. An illustration of American mechanisation of life and excessive emphasis on speed is to be found in an article by Leonard A. Stevens entitled "Why not speed up your Reading ?" in the February 1955 issue of *The Reader's Digest* called from Collier's Magazine. It is all concentrated on speeding up one's reading. It tells how Dr. Emmett Betts, director of Temple University's Reading Clinic, helped an executive to speed up his reading from 160 words a minute to 900 words a minute; it gives us information of low years ago the Mental Division of Imperial Chemical Industries started the first Effective Reading Courses in Europe with complementary comments from The Times Educational Supplement. The sentence at the top of the article "Poor reading ability may be costing your time, money, even a better job", gives a key to the approach towards reading. Reading is not for relaxation, entertainment, aesthetic gratification in the opinion of the writer of the article but it is solely for executive and business efficiency, for a man's getting on in life, for making more

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money, for a better job. This is prostitution of reading, a significant expression of American way of life and American values of life.

Modern man has neither the leisure nor the patience to read heavy and lengthy books. One-act plays, short stories, slick biographical sketches are the favourite forms to-day. One often hesitates to begin Gibbon's *Decline and Fall of the Roman Empire* on account of its size and so also Macaulay's elaborate *History of England.* Yet to-day we have lengthy books which have attained considerable popularity like Churchill's two sets of war memoirs, novels like Upton Sinclair's *Worlds' End* series, Marcel Prousts' *A la Recherche du Temps perdu*, Romain Rolland's *Jean-Christophe* and the 27 volumes of Jules Romain's *Les Hommerde Bonne Volonte'.* Very few persons have the time and patience to wade through the various volumes of Frazer's *Golden Bough*, a great masterly work of patient anthropological research. In spite of these undisputed great books a bulky book is not likely to attract the reader of to-day. It is true that most books of giant size are like those giant stars whose weight is in inverse proportion to their size. Bulk was valued by the Victorians; the three-decker novel was popular then. Between size and quality there is not any calculable relation. Stone is useful, a flower is enjoyable. No one can measure the length and breadth of beauty or desire. No foot-rule can be applied to Plato's *Dialogue* or yard-stick to Leonardo da Vincis' canvas. There is no stethoscope to measure the heart-throb's of a heroine's suffering or a physical scale to determine a saint's aspirations or a poet's expression.

Reading is not culture but a means of culture. Culture resides in men and not in buildings or institutions which are only the outward symbol of it. A genuinely cultured man cultivates the habit of reading purposefully, usefully, discriminatingly. Culture is product of leisure well employed. It is not a hot-house plant, artificially manured, and forcibly speeded. Well directed reading is the best means of employing leisure and acquiring culture and this is a rare occupation of the modern so-called educated man. His mind is too much distracted, his leisure is too much pre-occupied with other calls on it, and he is too ill-trained for this profitable and cheap mode of acquiring culture. The British Museum, it is reported, contains 40 miles of shelves of ranged side to side. Perhaps about 40 feet out of this huge collection of books would contain all the real literature of the world. A. A. Raven's bibliography states that between 1877 and 1935 a period of 58 years 2167 books, essays and articles appeared on the subject of *Hamlet.* Who has time and patience to wade through

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them all ? Not even Shakespearean scholars. Proper direction and discrimination are needed to journey through the delightful world of books.

Let us read slowly, let us read leisurely, let us read discriminatingly, let us waste our time in reading because there is no waste more paying than learning to waste one's time over a good book. The trained reader (and this training must be mostly self-training) acquires the capacity to endow himself with a refined and enriched sensitiveness so that living becomes for him deeper and fuller than it might otherwise have been. The master craft of all arts is the art of living (not making money, not getting power) and reading by enriching the mind, sharpening the wit, and refining the senses enlivens the reader's life. Through books there is an opening for both the rich and the poor into the world of

"Charm'd magic casements, opening on the foam
Of perilous seas, in fairy lands forlorn".

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# THE GARLANDS OF THE SEA

J. N. MISRA

As early as 1637 Ben Jonson described in his 'Masques at Cot' how oceans were garlanded with algae or sea grass. This remark of Ben Jonson is not the only one, since it may be remembered that Longfellow also wrote a poem entitled "Seaweeds." It may, therefore, be worthwhile to see if the sea garlands are really worthy of such appreciations. Every one can easily appreciate the garlands of the land in magnificient colours and varied forms of plants with glossy green foliage and brightly coloured flowers. These have altogether inspired the poetic wisdom of all since time immemorial. But the richness and granduer of the sea garlands has also not been-less. Because the sea has wreathed garlands from a varied assemblage of plants with the most delightful colours, and forms. The plants of the sea unlike those of the land constitute a single unit or one class popularly known as the seaweeds and biologically as algae. Algae are also found in the inland waters, and there are algae which live with comfort in relatively dry situations, as well as within the soil where they perform the role of soil economy. However, of all types of algae those living in the sea are unique, because no other algae and as a matter of fact no other plants can survive in such saltish water as that of the sea. Along with their specialised home, the sea algae are more attractive and surpass others in their usefulness. In colour, shape and size the plants of the sea garlands are so majestic that they give the same impressive view as the land plants do. This scenic view remaining hidden within the depths of sea water is partly revealed for its charming exhibition during such parts of the day when the sea water has receded back from a shore in the periods of low tides. On an occasion such as this, standing on the coast of Dwarka or Rameswaram, the onlooker will behold algal garlands of a construction which will surpass the most impressive garden of land planted by the most ingenious hands of a gardener. It is a collection of garlands which is unique with no flowers, but all plants. Yet their intrinsic colours are so attractive that they easily make the plant a flower. It is on this account that the marine algae are garlands of the sea. The sea garland mainly consists of blue-green, green golden-yellow, brown, and pink to red algae. To the botanist these colours, or rather the nature and proportions of the colouring pigments, have given the main clue to group algae into several classes. So that those which have blue-green colour

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have the green pigment-chlorophyll, the orange-carotin, the red-phycoerythrin, and the blue pigment-phycocyanin. Since the last is in such predominance the colour becomes blue-green, and the algae of blue-green are known as the myxophyceae or cyanophyceae. The algae of green colour have the green pigments-chlorophyll a and chlorophyll b, carotin, and a yellow pigment known as the xanthophyll, all in the same proportion as the land plants have. Consequently, the green algae are indicated by the name chlorophyceae. But in the yellow-green algae all the pigments of the green algae are present, while xanthophyll being in excess gives them yellow-green colour and the algae of such colour are known as xanthophyceae or chrysophyceae. Of the various classes of marine algae, brown algae are very conspicuous in the sea. And these contain in addition to the pigments present in the green algae an extra pigment fucoxanthin, in such amounts that the colour becomes brown and with it the algae form the brown algae or the phaeophyceae. The most impressive colour in the sea algae is red in several hues, possessing all the pigments of green algae plus a red pigment known as the phycoerythrin, so dominant that the algae are known as red algae or rhodophyceae.

A strip of coast with the profusion of such multicoloured algae looks like a carpet laid over with methodically arranged designes or patterns of algae. The patterns obviously have been determined by several conditions inherent to the sea and the topographical nature of the coast. Broadly speaking the patterns or the succession of algae all over the world follow the same sequence, commencing from the shallower to very deep regions of a coast. In the shallower parts of the coast, which is known as the intertidal region, the beginning of the sea garlands is marked by the blue-green algae, then follow the green in various shades, next the red in their most impressive hues of pink, pinkish-violet, red, and deep red. And lastly the garlands of red algae of the lower margin of the intertidal region, become goldenyellow or brown by the brown algae. These brown algae though intermixed with some green and red, occupy the entire deep regions or sublittoral parts of a coast . Here in these depths, amounting to about 300 ft. deep, the brown algae with their companions form extensive stretches of a vegetation which botanists have appropriately called 'sea meadows' or 'sea forests,' since the plants here have huge size and form like those of the land plants (Figs. 1, 2, 3, 4,).

In fact the algae of the sea are not merely conspicuous because of their colours, but it is their varied forms and shapes which are still remarkable. And so the blue-green algae have jelly like matrix in which are embe-

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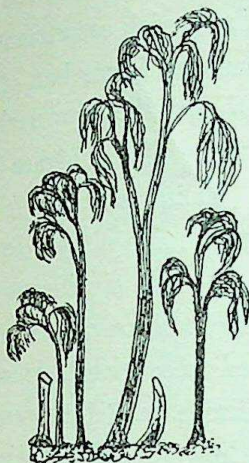

Fig. 1. Lessonia
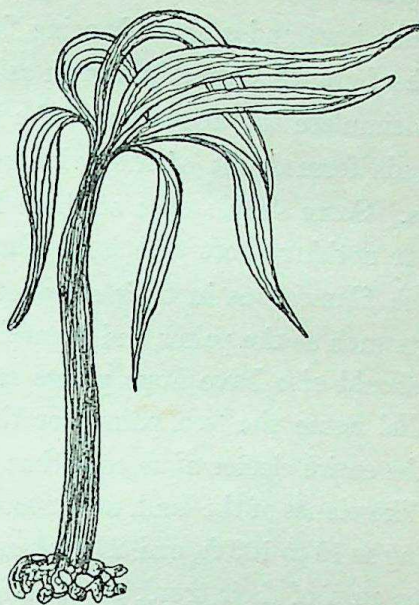
Fig. 2. Postelsia ("Sea palm")
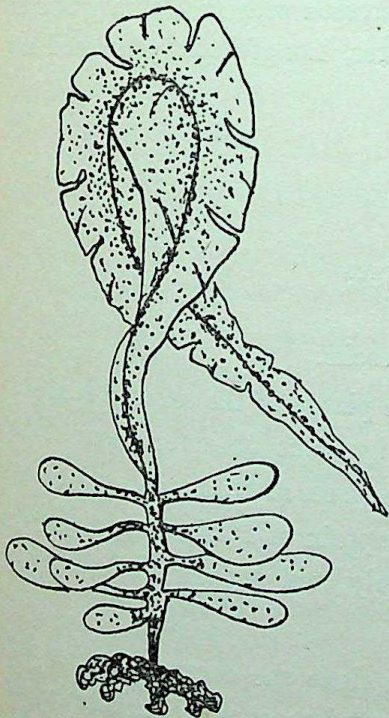
Fig. 3. Alaria

Fig. 4. Laminaria

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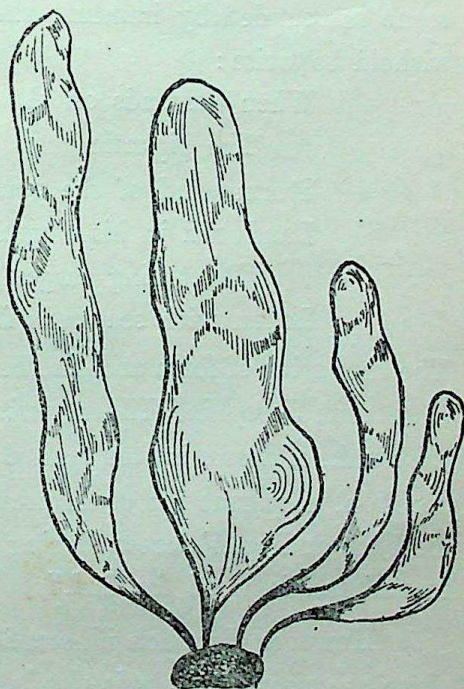
ded countless isolated cells or several hundreds of threads or filaments (Fig. 5) The green algae vary from being a simple filament to plants possessing a root like base and a shoot bearing 'leaves' (Fig. 6). or have the form of a bunch of grapes, correctly known as 'sea grapes' (Fig. 7). Still other green algae simulate the appearance of a ladies umbrella (Fig. 8). The red sea garlands formed out of the red algae are noted for a rich assortment of forms. Some simple ones of these have the filamentous forms but others appear nothing short of a land plant (Fig. 9). Of all, the brown algae, though filamentous in their simplest form, equal those of the higher land plants such as the palms and plantains (Figs. 1, 2). It is really unique that sea should also have huge plants such as these, and consequently have a parallel name the 'sea palms' or the 'sea bamboo.' The significant fact for the entire classes of algae is that in form and size the brown algae of the sea, like plants of the land, are arborescent, branched trees with their trunks as long as 10 to 100 ft, and as thick as 1 or 2 feet in diameter. Their pendant leaves atop of their trunk are as large as 3 feet in length. With their gregarious instinct they form forests just like the coniferous or oak forests of Himalayas. It is a charming sight to look to these remarkable forests of algae uncovered during the low tides and little effected by the full voilence of the seawaves in their fury. Perhaps impressed with such a magnificient scene surrounded by immense sheet of water, Longfellows pen could not withold to write:

When descends on the Atlantic
    The gigantic
Storm wind of the equinox
Landward in his wrath he scourges
    The toiling surges
Laden with seaweeds from the rocks.

The similarity of form and size between the plants of the sea and land is so close that Josephine Tilden, writes "The ignorant observer atonce takes the trunks of *Lessonia* thus washed up for the pieces of driftwood, and on one oceasion, no persuation could prevent the captain of a brig from employing his boat and boat's crew, during two bitterly cold days, in collecting this incumbustible weed for fuel."

However, by such illustration of the algae the common notion that algae are simple plants is not being attempted to cantradict, because the algae are no doubt a group of elementry plants, and most of them do not show the same majestic forms as the brown algae of the sea. The simplest ones are single celled plants, and the sea gives an abode to them

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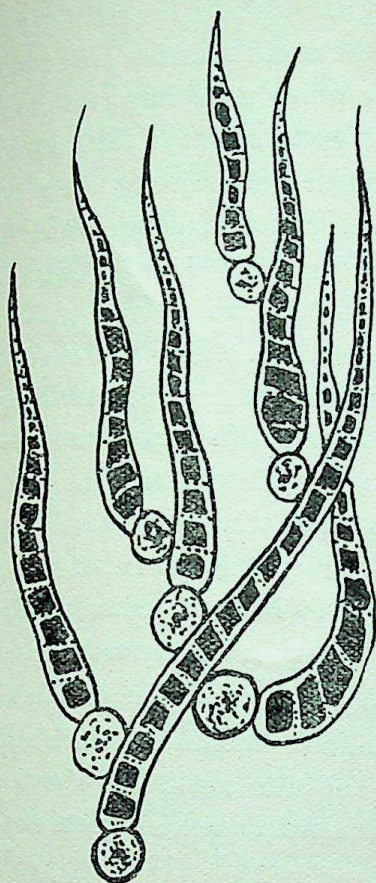

Fig. 5. Rivularia
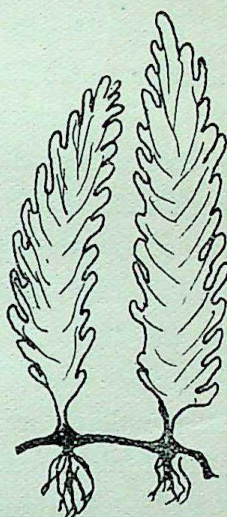
Fig. 6. Caulerpa
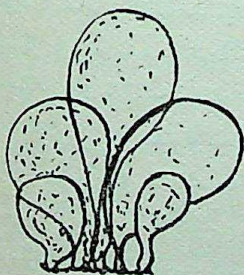
Fig. 7. Boergesenia- ("Sea Grapes")

Fig. 8. Acetabularia

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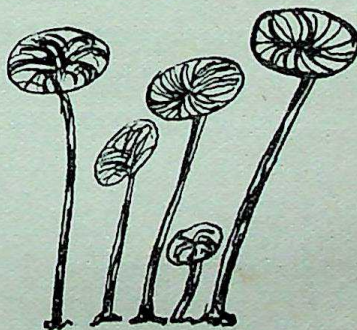
also. These minute or microscopic algae play very significant role in the biology and economy of the sea, as their bigger relations do. For one of such unicellular algae, namely, *Chlorella*, Bill Davidson in his article "Bread from Sea" remarks "In laboratories all over the world scientists are experimenting with a dark-green subtance that may prove more important to mankind than the atomic energy." This remark contains one of the most important forecast that if the inhabitants of a modern space ship have to survive, they would not take 'bread and butter' with them but would equip the ship with a small laboratory to grow, under the influence of light, a mass of *Chlorella* for their nutrition. As already Mrs. Hiroshi Tamiya, wife of the Japanese scientist has served algae bread, algae soup, and algae ice-cream from *Chlorella*. But *Chlorella* is not the only unicellular algae of the sea, there are numerous others built of a single cell, such as the diatoms and the desmids (Fig. 10). These diatoms have an unparalleled beauty, and like *Chlorella* they too do not lag behind in serving those who would care to ask them. Enamoured with the beauty of such unicellular plants of the sea "this vegetation of the sea may claim" as Shirley Hibberd writes," a share of our attention, not only for its variety and beauty or the mystery that surrounds its life in the depths of ever changing water or for the usefulness to man of a considerable part of it, or for its intimate associations with animal organisms that perhaps are more wonderful than itself, but above all things because it affords us one great and in certain sense complete expression of the will of god in things created" .

Yet of all the compliments paid to these simple members of the algae, it cannot be omitted to say that they have served their purpose well when, for instance, we remember that the organisms like diatoms of the sea have participated in the production of a most valued substance, namely the petroleum. It may appear fantastic, but the fact is that each single diatom cell floating in the prehistoric seas, carried in its shell a tiny speck of fat, and when countless diatoms became dead they sank down to convert their fat into petroleum. It would be difficult otherwise to account for the deposits of this essential oil, because the petroleum deposits cannot be synthesized physically. And their distribution, known once to have been warm, shallow, inland seas in which diatoms flourished profusely, is a great proof. While living, the diatoms and a hoard of other unicellular plants of the sea vegetation, floating and swarming about in immense numbers known as the planktons, constitute actually the grazing grounds for the huge fishes of the oceans. So they become directly the food of animals and indirectly of the human beings.

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As all living things the algae of the sea keep the progression of their kind. Unlike the flowering plants of the land, they have adopted simpler but more efficient ways for their quick and sure reproduction. Based upon these methods of reproduction the existence of the vast stretches of sea garlands depend. Reproduction in algae by one of such means is accomplished by frequent fragmentation or breaking of the plant body into small parts. These regenerating parts or fragments have the capacity of growing soon into a new plant just like the parent. Almost all algae can reproduce in this manner, but the 'gulf weed' known as *Sargassum* (Fig. 11) seems to have outmoded all others in this respect. As this algae occuring in huge tracts of drifting masses in the well known Sargasso Sea off the African Coast between Latitudes 20°N. and 35°N., illustrates a conventional example of reproduction by fragmentation. However, more properly the sea garlands keep afresh and youthful by reproducing through what we call as spores. A spore is a reproductive cell containing within a delicate membrane rich food materials to form a new plant of algae. They arise within the body of a parent or may be formed in special receptacles on the body of the parent, and in the formation of spores the parent plant has to perform a chain of complicated events. Functionally the spores of algae are not different from the seeds of a land plant. The only difference is that, whereas, the seed possesses a ready formed-embryo plant the algal spore is without an embryo-plant. As soon as the spores are set free by the parent, they give rise to a new plant which keeps the sea garland colourful and perpetually flourishing, and so the poet Barry Cornwall writes:

Oh wonderful thou art, great element;
And fearful in thy spleeny humours bent,
Is beautiful, and when thy silvery waves
Make music in earths dark and windy caves
I love to wonder on thy pebbled beach,
Marking the sunlight at the evening hour,
And hearken to the thoughts thy water teach
Eternity, Eternity and power.

In the history of man one fact stands out very glaringly, his habit to exploit all surrounding him. This habit incipient in the cave man has goded the man to harness the tremendous energies of an atom to-day. With such habits man would not leave anything including the algae for his benefits. Therefore, this brings us to economic aspects of the algae or sea garlands. In times past and present algae of the sea were firstly utilized as cattle food, and then as manure to increase the fertility of the cultivated land. Lastly,

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with more and more knowledge about the growth and chemistry of algae, a new era in the utility of algae as food, medicine, vitamins and as a source of several economic products is heralded all over the world. For several nations this brought in substantial benefits in their economics. However, in the earliest ages algae were not favoured and some even held them as useless plants, this is evident as Horace of 68-65 B.C. has expressed, that family and virtue without wealth are as worthless as seaweeds, and he speaks, therefore, 'inutilis alga' or worthless seaweed. However, there have been men who with little opportunity and less inclination to learn the wisdom of Horace, had to learn by experience the value and usefulness of algae of the sea. But later men like Plutarch asserted how seaweeds have contributed to the taste of man and as fodder for his animals.

Of those who utilized their algal wealth were the people of Scotland, Ireland, Norway, Germany, Sweden, France, North America, China and Japan, the last two to the greatest extent. But to-day algae claim an universal application directly or indirectly in the life of man. Thus on being proved that the large brown algae of the sea are very nutritious to the cattle as fodder, establishments for processing algae came into existence on the Pacific Coasts near Los Angeles. Apart from meeting the scarcity algal fodder appears to be superior to other types because it increases the fertility and birth rate of the cattle and it seems to the Norwegians it has proved almost an essential diet for the milching cattle and the poultry. As it has increased the milk output and the frequency of egg-laying. That algae fodder is as good as hay or oat fodder may easily be seen in the table below:

| Dry material | Water | Raw Protein | Fat | Carbohydrates | |
|---|---|---|---|---|---|
| Fucus (Algae) | 12.35 | 12.70 | 1.50 | 65.50 | (All in percentage) |
| Ascophyllum (Algae) | 11.10 | 6.10 | 3.50 | 59.56 | ,, |
| Laminaria (Algae) | 16.50 | 6.30 | 0.70 | 58.50 | ,, |
| Good Hay | 14.30 | 9.70 | 2.50 | 41.40 | ,, |
| Oats | 13.30 | 10.30 | 4.80 | 58.20 | ,, |

Algae in the service of agriculture as fertlizer or manure have found extensive utility from very early times and the advantages which algal manure gave to the cultivators led in the seventeenth century the French Government to instruct the coast dwellers to use seeweeds in their cultivations. The coastal lands manured with the algae in several parts of the

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world have been found to be so productive that some of them rightly constituted the 'ceinture dore' or golden belt, and so there are proverbs like 'no seaweed, no cornyard.' The value of algal manure, like other manures, depends mainly on the fact that algae contain good amounts of potash, phosphates, and nitrogenous matter. In addition the algal manure being purest is superior to other organic maures in the fact that it is absolutely free from seeds of the offensive weeds. The ordinary manure always contains good amount of those seeds which germinate readily, along with the crop plants, into weeds, which are always a source of headache to the cultvator. In order to assess the qualities of algal manure one can compare the composition of one ton of average farm manure with the same quantity of seaweed manure as mentioned below:

Seaweed manure: Weight 1 Ton: Nitrogenous matter 7 lb. Phosphates 2 lb. Potash 22 lb. Salts ; 35 lb. Organic matter 400 lb.

Farm manure: Weight 1 Ton: Nitrogenous matter 11 lb. Phosphates 6 lb. Potash 15 lb. Common Salts Organic matter 300 lb.

It will be evident that although the seaweed manure shows little deficiency in nitrogen and phosphorous contents, but in potash the seaweed manure excell nearly all types of manure, and therefore for crops like potato and beets it is much prefered, since the root crops need larger proportions of potash than most other crops.

Algae as food for human being have received a most creditable attention and so most coutries of the world use algae in several ways in their diet. The Japanese seem to have surpassed all others in eating algae to such an extent that after the natural supply became insufficient to satisfy the demand, attention had to be paid in divising ways and means to cultivate algae just in the same methodical way as in the case of rice crop. The success which the Japanese gained in this enterprise brought them a fairly large sum of money when they sold the cultivated edible sea algae. Similarly the Hawaiins are known to consume large amounts of algae, and they eat as many as seventy variety of algae, and like the Japanese they too cultivate this prize of their sea. In this connection it is unpleasent to say that a little before its heart-rending calamity Hiroshima had nearly thirty square miles under cultivation of seaweeds, employing nearly 3,000 men. It has been established that algae as a class contain all the requirements of a balanced diet and in addition a number of vitamins. The analyses carried out in numerous Marine Biological laboratories and the departments of Agriculture and Fisheries all over the world show that the edible algae in dry


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condition contain 10.58 to 25.94% of water; 4.03 to 36.63% protient; .04 to 1.73% fat; sugar 31.90 to 60.32% and salts 7.50 to 24.74%. While wheat-floor contains 13% of water; 9.5% protien; sugar 1%; and fat .8%. Potato and cabbage respectively contain 1.2% and 1.1% protien, 1.5% sugar anf fat .5%. Obviously, therefore, the algae in nutritional value cannot be underestimated. Algae are eaten in several ways differing according to the algae and according to the choice of people. In Europe and America the commonly known 'sea lettuce' or *Ulva lactuca* is eaten as salad, and with salad-cream, vinegar, lemon and chillies it prepares a salad no inferior to the best garden salad. In Germany and Norway bakeries have been established to prepare 'bread' from dried, ground and desalted algae of several types. While in Scotland people eat 'dulse' or *Rhodymenia palmata* (Fig. 12), fresh or boiled in milk. It is remarkable how variously algae can be rendered edible is illustrated by an article of Yarham (1944) that in Wisconsin in a banquet dehydrated algae were used for this feast and the dishes were fried seaweeds, seaweed puree, roast seaweeds and devilled seaweeds. In North America one of the important food industries is concerned with the red algae, *Chondrus crispus* and *Gigartina stellata*, chiefly in the preparation of fruit jellies, jams and ice-cream. The exact food material contained in these red algae is known as agar-agar, seen in the markets as transluscent sticks or sheets of yellow, pink or black colour. So far as we are concerned, it is not known if India possessing very rich algal vegetation in her oceans, ever utilized the algae, Though it is encouraging that the Marine Biological Station at Mandapam has prepared excellent quality of agar-agar. However, in Burma a seaweed named as *Catenella nipae* is in the markets for preparing salads.

For one reason or the other, of which the important one is the relative indigestibility, the algae are not able to enjoy indispensable place on the dining tables. But it must be remembered that algae are rich in vitamins and are well known to contain a fair amount of iodine both of which play significant role in human physiology and, therefore, they may be of considerable dietic value.

Not only are the algae useful as fodder, manure, and food, but in addition certain important commercial products are prepared from them In this connection Stanford in 1883 discovered a subtance known as algin from the algae of the sea. This discovery meant a new era in the uses of sea garlands. Algin is soluble sodium salt of the alginic acid, and the acid is a complex organic compound composed of the polymers of d-mannu-ronic acid, with the formula $(C_6H_8O_6)^n$. Where is a number between 80 and 83.

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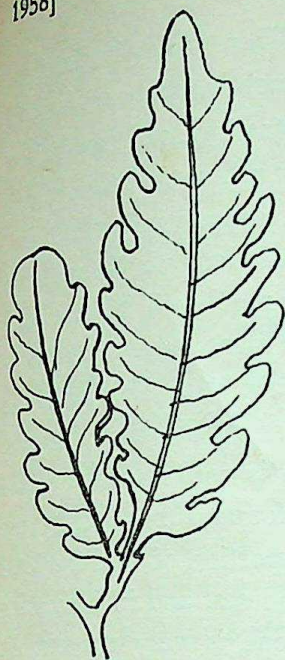
Fig, 9. Delesseria
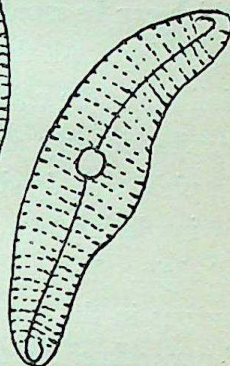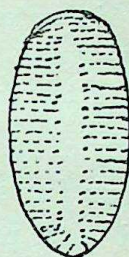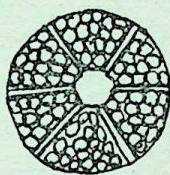
Fig. 10. Diatoms
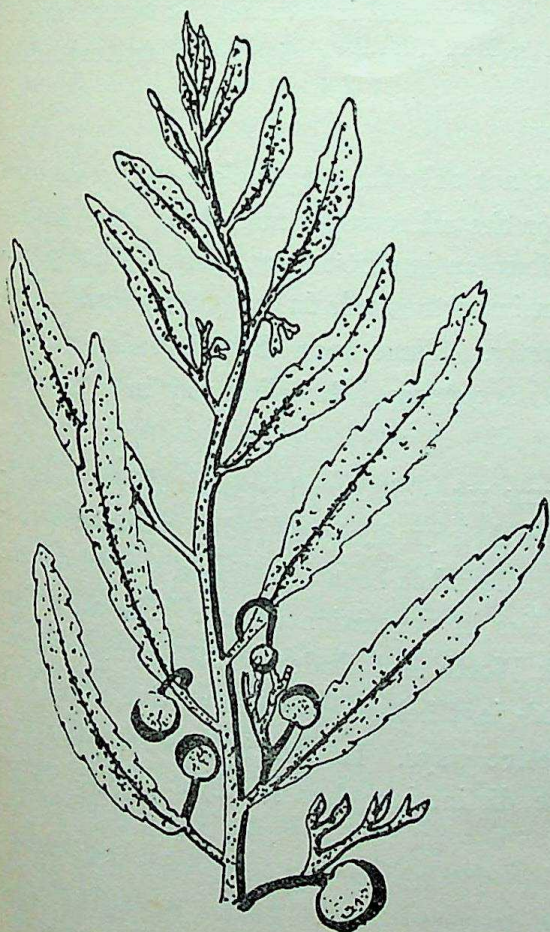
Fig. 11. Sargassum
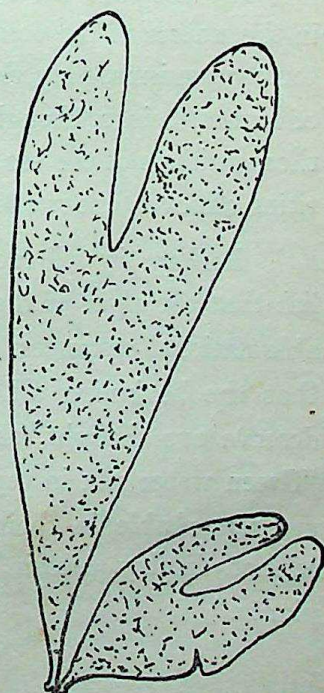
Fig. 12. Rhodymenia palmata ('Dulse')

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In properties algin is insoluble in cold water. When moist it dissolves in alkali, on drying it becomes hard and horny, though it can be worked on a lathe. Several salts of alginic acid like sodium, potassium, and magnesium readily dissolve in water to give a solution which is much viscous than starch or gum. The salts of heavy metals like mercury, copper and cobalt are, however, insoluble in water, but they yield an excellent plastic material which can be moulded as desired when moist. This mould will become hard on drying. All these qualities of algin, derived from algae, have great potentialities in the utility of seaweeds for commercial purposes. Such as in the textile industry algin forms an excellent dressing and polishing substance, to yield well dyed water proof cloth. Likewise it is used in manufacture of insulating materials. But United States has found a noteworthy use of algin. In this country algin is used to the proportion of half the total output in the manufacture of ice-creams, cream-cheeses, and in decorating fancy cakes. Perhaps of the multifarious uses one is very remarkable. In 1944 Speakman and Chamberlain discovered that calcium alginate can be woven or knitted, and then can be converted into an alkali-resistant rayon. The silk obtained is good in quality to compete with other artificaial silks made from other sources.

It may be mentioned that not only the larger algae of the sea have immense use, but the smaller or the microscopic unicellular algae floating in the waters of the oceans to form an important constituent of the planktonic organisms, play their own important role in supporting large masses of human beings, though indirectly. Since upon these depends the life of those animals of the sea, which are consumed day after day in huge quantities all over the world.

Perhaps it will require some more time and greater efforts to establish that the algae of the sea and their products are indispensable and valuable national resources. But one fact has been established beyond despute that the beginning all plants lies in vegetation of sea. The algae then deserve our thought, as Brook Worth and Enders (1955) have remarked "Green water silk in tepid pond-giant kelps along cold marine coasts both are remarkable in their respective ways. Indeed, it is a rare alga that cannot display certain private distinction that make it unique among plants."

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# HOW CAN YOU MAKE SURE THAT THE SEEDS YOU BUY ARE GOOD ?

K. KUMAR

One of the problems facing the farmer, horticulturist, forester and research worker is the purchase in bulk of good viable seeds. It is true that seed merchants of repute and government seed stores are expected to supply seeds of certified excellence ; however, owing, to the recent mushroom growth of a number of dealers in seeds and the lack of certainty that all the staff that mans the government seed organizations live up to their responsibilities, often inferior seeds of low germination capacity are passed off as good seeds. This is all the more easy since a seed sample may look perfect and yet be worthless from the point of view of germination. Where ostensible physical defects exist in a seed sample, the seed buyer is likely to exercise caution and reject such stuff, but what is he to do when a sample of seeds looks perfect ? How is he to know whether the performance of this seed in germination would be equally perfect. One way would be, to carry out a germination test, but such a test is not always practicable. Some seeds will no doubt germinate fully within four or five days under the proper conditions, but others may take a month or more, and purchases cannot obviously be held up for such a long time. Moreover, owing to the widespread occurrence of a period of dormancy in many seeds, seeds gathered at harvestl will not immediately germinate. They require a period of after-ripening which may extend from a few days to a few years. Obviously a germination test is ruled out under such conditions, because it takes so long to after-ripen and germinate the sample. A quick vitality test for seeds, developed by Flemion, which consists of growing the excised or partially excised embryo from dormant seeds at room temperature on moist filter-paper has proved of great value in assessing the germination capacity of seeds, but this method requires some skill in handling the seeds for removing the embryos uninjured, and can hardly be used by laymen. There are, however, some methods which even the layman can use with facility. For instance, seeds of the sample to be tested may be soaked in water for 3 or 4 hours and bisected in such a way as to fairly expose the germ or embryo in both sections of a seed. After sectioning 25 seeds in such manner they may be immersed in a week solution of the dye, indigo carmine, 1:2000. This dye penetrates dead embryos *readily*, but living embryos *much less readily*.

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Thus a differentiation of the live seeds from the dead or degenerate seeds is possible. Dimitriewiez found that sections of good grain seeds turned a deep rose colour in sulphuric acid in five minutes whereas sections of poor seeds required fifteen minutes. This obviously is another way to distinguish good from bad seeds. Soaking seeds in solutions of para-or ortho-dinitrobenzene for twenty hours, followed by treatment with ammonia for one hour, gives an orange colouration in live seeds. This constitutes yet another quick method for judging viability of seeds.

We also know that tellurites, tellurates, selenites and selenates enter seeds and are reduced to the elements tellurium and selenium giving purple colour with the tellurites and tellurates and yellow colour with the selenites and selenates. Tetrazolium salts as less toxic substitutes for selenium salts are now recommended. They are reduced to red formazanes in seeds. May and Baker have provided under the name "Grodex" a seed germination indicator which is a tetrazolium salt. Seeds are soaked in water for about 6 hours then either the whole seed or its sections are immersed in a 0.5 to 1% Grodex solution. Live seeds under this test attain a pink or red colour while the dead seeds fail to do so.

Determining in pint thermos bottles or Dewar's flasks the heat given out during respiration by different samples of soaked seeds would also measure roughly their viability, for the sapmle which shows a higher temperature under such conditions of test is composed of more live seeds than the other showing a lower temperature.

Measurement of catalase activity of different samples of seeds by grinding equal number of seeds or preferably equal mass of seeds of different samples separately in mortars with a little water and calcium carbonate, putting each ground mass with water in a graduated tube or in Davis apparatus and adding a known quantity of hydrogen peroxide to fill the tubes and collecting the relative quantity of oxygen evolved is also a method of distinguishing live from dead seeds. Live seeds evolve more oxygen under such circumstances. To make the test a little more accurate, the seed samples should be soaked overnight and then the procedure outlined above followed. Under such conditions dead seeds decrease their catalase activity and live seeds increase their catalase activity as measured by evolution of oxygen.

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# NEED FOR RESEARCH ON INDIAN MEDICINAL PLANTS FOR AYURVEDIC MEDICINES

P. N. BHARGAVA,

India has long been regarded as a veritable emporium of medicinal plants of all descriptions and perfuming spices on account of its vast dimensions. Unlimited varieties of natural flora and fauna quite distinct in character grow profusely throughout the length and breadth of this country. The potent medicinal plants have been found from times immemorial all over the hilly tracts and mountain valleys of India. In the Himalayan regions, above an elevation of about 6000-8000 feet, shrubs and trees as poplar, birch, fir, berberis, willow etc., grow in abundance. Still higher at an elevation of 13000-15000 feet touching the snow line are found many potent plants of medicinal value e.g., artemisia, gentian, ephedra, spruce, silver maple, etc., growing abundantly. In the hot and arid desert of Rajasthan, thorny shrubs like acasia, cactus, urticaria, euphorbia, etc., are no less prominent. The luxuriant growth of the erect and scandent shrubs as bignonia, hibiscus, ixora, thebatia, magnolia etc., in Assam, Bengal, South India and Malabar where the average temperature is always high and the rainfall heavy, is remarkably tremendous. Thus India with its countless generations of flora and fauna is a naturalist's museum which affords sufficient materials for intensive scientific study. The drug resources of India too are vast and inexhaustible and are largely employed in the Ayurvedic system of medicine.

The Indian medicinal plants are also of no less importance from the Chemist's point of view. The plant resources not only provide means of supplying food, clothing and other articles of necessity for the teeming millions inhabiting this land but are also useful for the elaboration of drugs to be utilised in the art of healing. The famous Indian system of curative science well known as the Ayurvedic system of medicine has been in practice here from the dawn of civilisation and is prominent in the world for the evolution of the potent drugs of India. The potency of these plants is due to the physiological action of the important ingredients contained in them. These medicinal plants have long been in use for the alleviation of human sufferings and since life and diseases have coexisted, therefore their study must also have been concomitant with the dawn of human intellect and evolution.

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The aborigines used indigenous drugs prepared from the plants, which grew profusely in their neighbourhood as therapeutic agents and remedial measures. The knowledge of these potent drugs has infact advanced the cause of medicine a step further. Thus the Ayurvedic system of medicine has developed considerably by untiring human labour and ingenuity. The cause of the potency of indigenous drugs has further necessitated a complete chemical survey of their active ingredients so as to classify them accor- to the pharmacological properties and to weed out the worthless from the good. The colossal magnitude of the problem of isolating and indentifying the drugs transcends all imagination. Really it is such a tremendous task that any attempt on the part of a single worker to tackle the problem would be a failure. Inspite of the fact that generations of chemists and pharmacologists have been working for ages in this field, it has still remained largely unexplored. Nevertheless, contributions in this line by a single worker would form a nucleus or be an incentive for the future chemists and should always be welcomed. A thorough and complete research into this vast field would involve persistent and life long work of innumerable chemists and pharmacologists.

The Ayurvedic system of medicine, which has sprung up and advanced by rapid strides through the ingenious efforts and untiring zeal and energy of such savants as Charaka, Susruta, Narhari Pandita, Madan Pal, Bhava Mishra, Medini and others, is based entirely on the physiological properties and pharmacological action of the Indian medicinal plants. As a result, this system of curative science began to be considered as something inspired and supernatural. The systematic study of Indian medicinal plants on scientific lines dates back from 1800 A.D. The important contributions made hitherto in this field are Roxburgh's 'Flora Indica.' Dymock, Warden and Hooper's 'Pharmacographia Indica', Kirtikar and Basu's 'Indian Medicinal Plants' and Col. R. N. Chopra's 'Indigenous Drugs of India' and so on. Further inspite of their attempts to survey the potent drugs by the Indigenous Drugs Committee on behalf of the Government of India, most of them still remain unexplored.

In ancient times Botanical gardens for cultivation of drugs were maintained under the supervision of qualified specialists. In Germany and America, gardens of medicinal and essential oil bearing plants have proved a great success in so far as thousands of medicines prepared from these materials by advanced chemical processes have brought in immense wealth from foreign lands. If such a system is also introduced in India, it will not only save the drain of India's wealth to foreign countries, but on the

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other hand, bring large profits to the cultivating classes whose agricultural returns are at present poor. It is, however, important and a matter of satisfaction to note that in the beginning of the twentieth century a start was made in this direction under the auspices of the Forest Research Institute Dehradun, the Imperial Institute of Agricultural Research, New Delhi and the School of Tropical Medicine and Hygiene, Calcutta. In 1913, Shri Pruan Singh encouraged the cultivation of medicinal plants in India. Later on a number of Chemists and Pharmacologists as Col. R. N. Chopra, Dr. S. Ghosh, Dr. S. Dutt, Dr. T. R. Sheshadri, Dr. S. Krishna, the author himself and others have done very useful work in isolating, identifying and testing the pharmacological as well as clinical action of the active principles of various medicinal plants. Such a detailed study will contribute a lot to the science of drug chemistry and bring new facts to the notice of the medical profession in India. Hence, any systematic and profitable research work in this direction will enable the capitalists to open up new fields of enterprise in this country. As a result of these researches and their applications to industry, the Bengal Chemical and Pharmaceutical works, Calcutta, the Alembic Chemical Works, Baroda etc., which are brilliant examples of such an enterprise in this field, have slowly but steadily built up big and prosperous business concerns.

The Indian medicinal plants contain a large number of active principles, the most important amongst which are the alkaloids, glucosides, lactones, colouring matters, saponins, essential oils, fixed oils, sterols, resins, phenolic bodies, hydrocarbons etc. Besides these there are other ingredients as well, which are responsible for the physiological properties of the drugs. As none of these is used in an isolated state in the Ayurvedic system, the action of the drug as a whole will vary according to the source, soil, climate and the concentration of the active principle. But as a large number of these are used in the rival Allopathic system, which is becoming more and more popular every day on account of its rapid action, it has now become essential to develop the drug resources of India and also to make their utilisation in an isolated state in the Ayurvedic system of medicine.

With this point of view a number of medicinal plants e.g., Embelia ribes, Aegele marmelos, Hygrophyla spinosa, Alangium lamarcki, Centaurea behen, Azedirachta indica, Tinospora cordifolia, Lawsonia alba, Datura stramonium, Butea frondosa, Ocimum sanctum etc., which are reputed to possess important therapeutic properties, have been examined chemically and their various constituents isolated and analysed by a number of chemists and pharmacologists. If these chemical constituents prove on adminis-


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tration to patients to be more efficacious in their physiological action than the mother plant itself, it would not only advance the cause of the Ayurvedic system of medicine a step further, but would also be an incentive for young chemists and pharmacologists to undertake the examination of the active principles of unexplored plants and their application in the preparation of new medicines.

In the year 1944, the Drugs Technical Advisory Board set up by the Government of India appointed a committee under the Chairmanship of Col. R. N. Chopra to prepare a list of drugs of therapeutic importance or medicinal value not included in the British Pharmacopoeia to be included in Official Pharmacopoeia. The recommendations of the Board regarding the standardisation of drugs for their uniformity and tests for identity and purity have been approved by the Government of India. The report includes (*a*) synonyms of Indian Medicinal Plants in Hindustani language, (*b*) characteristics of drugs and raw materials, (*c*) methods of extraction and preparation, (*d*) standardisation of the isolated active principles, (*e*) storage and (*f*) regulations. The only defect in the scheme is that there is no discussion on therapeutic applications and pharmacology of drugs, with which many of us are not well familiar and which will facilitate the use of new and better drugs as substitutes for the inefficient ones. Now the present National Government in view of the countrywide industrialisation of India to provide employment to the vast millions of poor Indians and to foster the Pharmaceutical industry in India, should encourage researches into medicinal plants mentioned in Ayurvedic and Unani texts by establishing a Therapeutic Research Institute consisting of sections on (*a*) Biochemistry and Chemistry in relation to medicine, (*b*) Physiology and Pharmacology, (*c*) Pathology and Microbiology, (*d*) Clinical laboratory, (*e*) Animal house and (*f*) Library.

It is a matter of satisfaction that the Union Government has after all in the first five year plan established the Central Drug Research Institute, one of the fourteen national laboratories in India. It is housed in magnificent Chattar Manzil at Lucknow. Its beautiful site overlooking the river Gomti, its fabulous furnishings and lofty halls made it the premier palace of the state. This palace was taken over by the Council of Scientific and Industrial Research in 1950. Although many modifications and alterations have been made, yet the facade remains unaltered and untouched. This institute has an extensive programme for testing and standardising drugs and will also work on synthetic drugs and antibioties.

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# ON SMOKING

B. K. PRASAD, B.H.U.

## Tobacco

Indian soil and climate are suited to the growth of tobacco. In the upper provinces of Shasipur and Pusa Indian tobacco is mostly grown from American seeds imported from Verginia and the West Indies. The time for sowing is from August to January. They are ready for cutting in four months. The leaves after cutting are covered in palm leaves and pressed with heavy stones for six days and then again and again they are pressed and stocked until they are considered fit for packing. Tobacco is used for smoking and in the manufacture of Cigars, Biri, Surti and also used as such in lime as Khaini. It is a thriving industry and exported tobacco brings a large revenue to Indian treasury.

## Smoking on the increase in India

Following press report from Union Head Quarters published in the daily press dated 19th April, 1955 is indeed disquieting. "Smoking is on the increase in India. The consumption of Indian Cigarettes went up from 18,000,000 in 1958 to 19,776,000,000 in 1954 while that of imported Cigarettes went up to 84,000,000 in 1958 from 54,000,000 in 1954. Cigars and churootes seem to be going out of fashion, the consumption of the imported and indegenous having declined. In rural areas beedi smoking has gone up from a total of 114,888,000 in 1952, to 117,681,000 in 1954. The same is the case with Hookah and chewing of tobacco. The fact that smoking is on the increase in India is not a matter for elation and pride. During the last five years we have had several authentic reports on the relationship between smoking habits and Human Death-rates.

## Smoking and Mortality

Doctors Hammond and Horn, statisticians of the American Cancer society recently presented a preliminary report covering about 20 months of a follow up study of 183,766 men between the ages of 50 and 69 in which they compared the overall death rate. The death rate from diseases of the coronary arteries and the death rate from lung cancer, are all much higher among men with a history of regular Cigarette-Smoking than among who did not smoke at all. Among those, who smoked a packet a day or

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more, 745 died during the period. In a comparablegroup of nonsmokers there had been 319 fever deaths. Cancer killed 161 of the heavy smokers 98 more than the expectation for non smokers. Coronary diseases killed 844 smokers, 168 above the expectations for non smokers. In the age range from 50 to 59 the smokers death rate from cancer was more than 60% higher than that among non smokers, from 60 to 64 it was 102% higher and over 65 it was 80% higher. Lung cancer was found to be 15 times as prevelant among heavy smokers as among those who have never smoked regularly. But smokers had a higher death rate from other type of cancer. Hammond and Horn had not expected to make a report so soon, but they found smokers' death rate so alarming that they decided to publish the preliminary results. They said that they personally had stopped smoking Cigarettes.

Charles Cainron, medical director of the American Cancer society commented that the smoking picture was "admittedly grim", but said that a cause and effect relation has not yet been finally proved. He also suggested that smokers console themselves by viewing the situation in terms of expectations. At age 50, he pointed out, a non-smoker has about one chance in 100 of dying in the next 18 months. For a heavy smoker the risk to one chance in 50.

The British report published in the British Medical Journal was based on a Convass of 40,000 physicians by Richard Doll and A. Bradford Hill. Among doctors over 35, non-smokers had an annual death rate of 3.89 per thousand; whereas those who smoked 25 Cigarettes or more per day had a death rate of 5.15 per thousand; of 789 doctors who died in a 29 month period 36 had Lung cancer. All 36 were smokers. Doll and Hill also noted an increase in Coronary thrombosis among smokers. (Scientific American, Aug. 1954). Their finding show a definite association between smoking habits and the death from Lung Cancer and coronary artery disease, thus reflecting a cause and effect relationship. (Science 17-9-1954). Prof. F. Lickint who has devoted much careful study to this subject for many years, has recently published a book of 212 pages in series "Contributions to cancer research" (sheoder stein kopff Dresden and Lei pzig) entitled Acteology and prophylates of Lung cancer as a problem of Industrial Hygiene and tobacco smoking. A review of this book, contains the following passages.

"It is interesting to note that in almost half the case, the patients had been smoking for 40 years when the Lung cancer developed. Thus

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in view of the increase in smoking during the last few decades a further increase in the incidence of Bronchial carcenoma is to be expected".

Thè author recommends complete abstinence as the ideal, particularly in adolescence—people who can not or will not give up smoking are advised to smoke Cigars and pipes in order to avoid the harmful inhalation. It is further recommended that people should smoke slowly and throw away the last third or quarter of the Cigar or Cigarettes. Filter retains about 10-15% of the harmful tar products, but allow the remainder to pass through. The question whether there is any point in stopping smoking after 20-30 years is answered in the affirmative.

The economic aspect of tobacco smoking involves an industry whose total business runs into crores of rupees. Small wonder than that the tobacco industry is willing to spend unlimited sums of money to ascertain the facts. The innovation of filtered tipped Cigartetes is merely a renewal of an old product which never gained popularity. Some smokers believe that ample protection is afforded by the filtered tips but these have been proved to have no specific property in eliminating the deletarious compounds in tobacco.

The harmful effects of tobacco used either for smoking or chewing is no new discovery. The damage which results will no doubt depend to some extent on the depth of the extent of the habit and on individual tolerance.

It is undesirable to indulge in speculative conclusion or Scare-psychology. But it is imperative that the medical profession and the public should be enlightened on the potential and the grave risk involved in the excessive use of tobacco.

If the extensive and intensive researches now being carried out in Europe and America conclusively establish the cause and effect relationship of smoking to Cancer and other dangerous diseases, the union and State government will have to prohibit smoking and chewing (the use of tobacco) generally by suitable legislative enactments, on the same lines adopted in the case of intoxicating drinks. Loss of revenue to the state exchequer, there is bound to be if such a step has to be taken, but in view of the need for the preservation of national Health, Governments should not hesitate to prohibit the use of tobacco as they have done in regard to the use of spiritous liquors.

Scientific evidence here shows that there is a relationship between Ciggarette smoking and cancer of the lungs and Coronory diseases. Of course,

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most of the smokers don't want to believe it. But after all it's better to be safe than sorry. It is told that unless the death rate is reduced, a million people will have died from lung cancer by the end of the century.

Well this should give food for reflection to the vast army of cigarette smokers *The tobacco habit is unnatural, unhealthy, and injurious, especially when the smoker is a heavy one.*

More over, the habit is an expensive one. The money consumed by the lower paid workers, like clerks and assistants, on tobacco is enormous, and must prove an embarassment on the economic side. The money spent on this popular indulgence could be used to much better purpose, to feed the wife and children properly. The fact that so many deny themselves and their families wholesome necessities in order to satisfy their craving for tobacco, is evidence of the hold it has upon them.

Perhaps this most recent medical prononcement on the subject may lead many to break free from the destructive habit. We hope so (the family physicion. London May 1954).

### Smoking and Ill-health

The influence of smoking on respiratory altergy is discussed by Petit who contends that all tobacco smoking is irritating. This is because it contains either glycerine or diathylene glycol as a moistening agent, nicotine carbon monoxide, ammonia and other volatile alkaline materials containing tar "All these substances chemically irritates the membranes. In addition smoking dries the membranes of the respiratory tract excessively and the actual heat engendered from smoking irritates and disturbs the normal functions of the respiratory membranes. Petit claimed that physicians are not emphatic enough in advising patients to stop their smoking, especially "in many patients who have a chain of symptoms simulating bronchial asthma and chronic nasal allergy." He held also that smoking is the major additive factor in production of symptoms in many patients who have minor troubles, and that smoking is an additive factor in a large group of patients exhibiting signs of major allergy (South M. Jour 47 '54).

### Tobacco : A Narcotic

Tobacco is a narcotic capable of producing tolerance, dependency, and withdrawal phenomena in those persons accustomed to its use. Thus, it fulfils the requirements for the definition of an addicting (habit for-ming) substance. The sceptic who is unwilling to accept this fact will find solace

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in the words of Sollmann who writes of the toxic effects of the active principale of tobacco, the alkaloid nicotine—"Nicotine is one of the most fatal and rapid poison, the vapours arising from a glass rod moistened with it and brought near the beak of a small bird causes it to drop dead at once, and 2 drops placed on the gums of a dog may give a similar result. It acts with a swiftness equalled only by hydrocynic acid." Apart from its addicting properties there appears to be ample evidence that there is a relationship between tobacco and physical disease, Cancer of the Lung, coronary and peripheral vascular diseases, and their un-natural alliance cannot be denied or ignored. It is a strange commentary on the public at large, and especially on the medical profession as a class, that despite repeated and pointed warnings in both lay and professional literature of the deleterious and even fatal implications of tobacco addiction the use of tobacco continues in rising proportion.

## Tobacco-Addiction

Marktwain once remarked "It is easy to give up tobacco, I have done quite a thousand times." The humour in his statement can not be denied, however, it seriously reflects the experience of the older smoker who has spent a good part of a life time in the consumption of more than onehalf million Cigarettes. Such a person is in a good position to elaborate on, literally hundreds of attempts on his part to abandon the poison, threatening his very existence. Similar unsuccessful attempts by millions of other tobacco users, since the time of Raleigh would indicate once more that the substance under discussion is not to be dealt with lightly. The user of tobacco who wishes to refuse the addicting qualities of this drug has only to examine honesty his own experience.

The renunciation of tobacco for some is a simple task, for others the task is an Herculean effort. Unfortunately the work to be done often is rendered no less easy by news of a heart disease or a suspicious Lung Legion that portends catastrophe. The scheme that follows is not for the strong who wear their chains tightly ; rather it is for the miserable slave whose shackles bruise and grow heavier with the passing of the years. Some 200 years ago, a venerable apothecary of London whose name has been lost in obscurity, becoming alarmed over the increasing prevalence of snuff-taking and its deleterious consequences, offered a remedy for those afflicted with what he considered to be on unwholesome pastime.

It is the purpose of this paper to present the proposed remedy as a simple and effective approach to the abandonment of tobacco. The plan

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is unique in that it paradoxically allows the tobacco addict to continue the use of the drug while in the process of its complete renunciation. The plan of treatment is as follows :—

The patient proceeds upon a planned schedule with the determination to adhere faithfully to its simple provisions. The principle involved is the progressive reduction of the tobacco intake by one hour each day. The person, for example, rises from bed at 6 A.M. and will thus embark upon its reduction at that hour for the first day. He starts smoking at 6 A.M. and may smoke all that he chooses until midnight or there about. When he normally retires for sleep.

The next morning, or the second day of the treatment plan, he moves his smoking time up one hour to 7 A.M. Again, he may smoke all that he desires until midnight. On the third day he moves his smoking activities up until 8 A.M. and so on successively to the end, that smoking is delayed by one hour each day until the subject reaches midnight of the final day. He is now aware of the fact that during the eighteen day period he has progressively diminished his smoking time by one hour each day and finds, that on the last day he has only one hour from 11 P.M. until midnight, to indulge in smoking. Again he may smoke all he wishes during this final hour. At its conclusion, he retires to bed having completed the reduction treatment.

In the plan proposed the patient is assured positively from the first day that he not only will be allowed to smoke as much as he chooses. He is required only to delay relatively short, though postponing time each day his initial indulgence in tobacco. The positive assurance of unlimited smoking privileges is sufficient to surtain him through the progressively increasing period of daily abstinance. (Texas state jour. Med. 50, 1st Jan. 54).

*Note* :—This would pari passu apply to snuffers and chewers of tobacco.

## Society and Smoking

Smoking in the present age is considered to be a most up-to-date fashion and a part of civilization. Wherever one goes he is offered a Cigarette either as a mark of respect or to show generosity and social etiquette. In every marriage ceremonies parties or meetings Cigarette is sure to be offered. The person who smokes or offers Cigarette or receives a Cigarette is considered to be most civilized and up-to-date. Many non-smokers also accept at times simply to oblige and show the offerer his respect. Most of the

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doctors who are considered to be the last word on health also smoke and so the lay public considers that smoking is harmless. Had it been harmful the doctors at least would not smoke. Take for example how the child picks up smoking. He daily sees his father or uncle or elders smoking. He sees his teacher smoking. Wherever he goes to his relatives, or when moves in social circles he sees people smoking. He gets inquisitive and starts smoking himself. This is how the society is encouraging smoking. Cigarette is also offered to oblige and influence people in society.

Smoking should be discarded by the society and then only it will have some influence over individual smokers. Public smoking should not be allowed in schools or colleges and Hostels, Cinema halls, Buses, Trains, in marriage functions parties, clubs, meetings or any gatherings. At least to start with separate places allotted for the same may be given. In the offices this can be easily done and only then we may reduce considerable numberof smokers.

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# BERNOULLI NUMBERS

BRIJ MOHAN

## 1. James Bernoulli

James Bernoulli belonged to a Protestant family of the 17th century which produced eight mathematicians during the course of a century. It is a remarkable fact about this family that seven of these eight mathematicians chose a wrong subject to start with. James' father wanted him to become a church minister. For that purpose he wanted him to study Philosophy at Basle. James soon found out that his real interest was in Mathematics. So, he gave up the idea of joining the church and took to Mathematics. In 1687 he was appointed Prof. of Maths., at Basle which post he occupied till his death. He was only 51 when he died in 1705.

Out of the eight mathematicians the family produced three were outstanding : James, his brother John and John's second son, Daniel. John and Daniel began their career as Physicians and later on changed over to Maths. Four of the remaining mathematicians of the family began their career with the study of Law but soon after gave up the subject and took to Maths.

James Bernoulli lived from 1654 to 1705. His special interest was in Calculus, Analytic Geometry, Theory of Probability and the Calculus of Variations. To us he is more known as the initiator of the numbers now called Bernoulli Numbers. The Calculus of Variations is a very ancient subject. There are two legends connected with it. Queen Dido was once given a bull's hide. She was asked so to cut the skin as to enclose the greatest area. She got it cut into one huge strip and bent it in the form of a semi-circle. The second legend is that when the city of Carthage was founded, the city was to be given a piece of land. The condition was that the city could take as much land as a single man could plough round in a day. Now, subject to the condition the city wanted to take as much land as it could. So, the problem is : Suppose a single man can plough one straight row of a certain length in a day. In what form should the straight line be bent in order to cover the greatest area ? In other words, suppose the perimeter of a curve is given. What shape should be given to the curve in order that it may cover the greatest area ? This would today be called an isoperimetric problem. The Greek mathematicians after Euclid proved that of two polygons having the same perimeter, the

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one that was regular enclosed a greater area than the one that was irregular. As a limit it follows that of all figures having the same perimeter the circle encloses the greatest area.

There is another problem of the same type in which both the brothers James and John were interested. The problem is: Given a curve. Find out another curve which will enclose the maximum or minimum area and the ordinates of which would bear a given ratio with the ordinates of the given curve. This problem was thrown as a challenge by James to his contemporary mathematicians. Several methematicians including his brother John tried to solve the problem. James showed that the solution of his brother was wrong. Later on James himself found out a solution which could not be published till his death. After his death his brother John published the solution as his own. This shows that John was not particularly honest in his dealings. Not only that. He was extremelyjealous of his brother and even his own son. Once John and his son were both competitors for the same prize of the French Academy of Sciences. The son got the prize. The father was so much annoyed at this that he threw the son out of the house.

Both the brothers simultaneously discovered the fact that the cycloid was the brachistochrone, i.e., the curve of quickest descent. It was his brother who was struck with the fact that the cycloid was also the tautochrone. That is to say, a heavy particle always takes the same time to fall down a cycloid no matter at what point of the curve it starts. Among other subjects James took interest in, may be mentioned the Polar Coordinates, Differential and Integral Calculus and the catenary. His famous treatise on the theory of probability, the Ars Conjectandi, was published after his death in 1713.

It is customary for great men to declare in advance as to what kind of inscription should be engraved on their tombstone. Like a typical mathematician James Bernoulli decided that the logarithmic spiral should be engraved on his tomb. He was struck by the fact that under certain conditions the spiral reproduces itself. So, he got the curve engraved on his tomb along with an inscription the literal meaning of which is "Though changed I will arise the same again".

## 2. The discovery of the Bernoulli Numbers

There are many special kinds of numbers used in Analysis. But it is not easy to call up any category so important and of so wide an appli-

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cation as the Bernoulli numbers. These numbers first occurred in Bernoulli's Ars Conjectandi. They occupy only three pages of the book. But it is difficult to conjecture a larger amount of wisdom condensed in equally short space. The work was published 200 years ago. But even today it appears as fresh as any of the latest discoveries on numbers. Many properties of these numbers have been discovered since then, and by modern methods. But even today mathematicians cannot explain how Bernoulli discovered these properties with the incomplete methods available during his times.

Bernoulli starts with the following table of figurate numbers:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 1 | 1 | | | | | | | |
| 1 | 2 | 1 | | | | | | |
| 1 | 3 | 3 | 1 | | | | | |
| 1 | 4 | 6 | 4 | 1 | | | | |
| 1 | 5 | 10 | 10 | 5 | 1 | | | |
| 1 | 6 | 15 | 20 | 15 | 6 | 1 | | |
| 1 | 7 | 21 | 35 | 35 | 21 | 7 | 1 | |
| 1 | 8 | 28 | 56 | 70 | 56 | 28 | 8 | 1 |

To make a square of this triangle Bernoulli adds the requisite number of zeros to each column. Thus, we arrive at the following table:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 4 | 6 | 4 | 1 | 0 | 0 | 0 | 0 |
| 1 | 5 | 10 | 10 | 5 | 1 | 0 | 0 | 0 |
| 1 | 6 | 15 | 20 | 15 | 6 | 1 | 0 | 0 |
| 1 | 7 | 21 | 35 | 35 | 21 | 7 | 1 | 0 |
| 1 | 8 | 28 | 56 | 70 | 56 | 28 | 8 | 1 |

It will be seen that the general terms of these columns are respectively:

$$1,\ (n-1),\ \frac{(n-1)\ (n-2)}{\lfloor 2},\quad \frac{(n-1)\ (n-2)\ (n-3)}{\lfloor 3},\ \ldots\ldots\ldots\ldots$$

Now, Bernoulli was struck by a remarkable property of these numbers. Add up the numbers in any column up to any row. Divide this sum by the sum of the numbers in which each number is replaced by the last number taken. This ratio will come out to be a constant.

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Let us take up the first five numbers of the fourth column and perform this operation upon them. We arrive at the ratio

$$\frac{0+0+0+1+4}{4+4+4+4+4}=\frac{5}{20}=\frac{1}{4}$$

If we take the first six numbers of the same column, we get

$$\frac{0+0+0+1+4+10}{10+10+10+10+10+10}=\frac{15}{60}=\frac{1}{4}.$$

Taking the first seven numbers we arrive at the same result thus:

$$\frac{0+0+0+1+4+10+20}{20+20+20+20+20+20+20}=\frac{35}{140}=\frac{1}{4}.$$

And, generally speaking, the ratio for any number of numbers of the same column would be the same.

The corresponding ratio for the second column would be $\frac{1}{2}$; that for the third column would be $\frac{1}{3}$, and so on.

Now, starting with the second column we get

$$\tfrac{1}{2}=\frac{0+1+2+3+\ldots\ldots+(n-1)}{(n-1)+(n-1)+(n-1)+\ldots\ldots(n-1)}=\frac{\Sigma\,(n-1)}{n(n-1)}$$

$$\therefore\ \tfrac{1}{2}\,n(n-1)=\Sigma\,(n-1)=\Sigma\ n-\Sigma\ 1$$

$$\text{or }\Sigma\ n=\Sigma 1+\tfrac{1}{2}\,n(n-1)=n+\tfrac{1}{2}\,n(n-1)=\tfrac{1}{2}\,n(n+1) \qquad (1)$$

This gives us the sum of the first $n$ natural numbers.

Starting with the third column we get

$$\tfrac{1}{3}=\frac{0+0+1+3+6+\ldots\ldots\ldots\ldots+\dfrac{(n-1)\,(n-2)}{\lfloor 2}}{\dfrac{(n-1)\,(n-2)}{\lfloor 2}+\dfrac{(n-1)(n-2)}{\lfloor 2}+\ldots\ \dfrac{(n-1)(n-2)}{\lfloor 2}}=\frac{\Sigma\ \dfrac{(n-1)\,(n-2)}{2}}{\dfrac{n(n-1)\,(n-2)}{\lfloor 2}}$$

$$\therefore\ \tfrac{1}{6}\,n(n-1)\ \ (n-2)=\tfrac{1}{2}\ \Sigma(n-1)\ (n-2),$$

so that $\quad \tfrac{1}{3}n(n-1)(n-2)=\Sigma n^2-3\Sigma n+2\Sigma 1$

$\therefore \quad \Sigma n^2=\tfrac{1}{3}n(n-1)(n-2)+3\Sigma n-2\Sigma 1$

$$=\tfrac{1}{3}n(n-1)(n-2)+3\,.\,\frac{n(n+1)}{2}-2n=\tfrac{1}{6}n(n+1)(2n+1). \qquad (2)$$

If, likewise, we start with the fourth column, we get

$$\tfrac{1}{4}=\frac{0+0+0+1+4+10+\ldots\ldots\ \dfrac{(n-1)(n-2)(n-3)}{\lfloor 3}}{\dfrac{(n-1)(n-2)(n-3)}{\lfloor 3}+\dfrac{(n-1)(n-2)(n-3)}{\lfloor 3}+\ldots\ldots+\dfrac{(n-1)(n-2)(n-3)}{\lfloor 3}}$$

$$\text{or, }\tfrac{1}{4}=\frac{\Sigma\ \dfrac{(n-1)(n-2)(n-3)}{6}}{\dfrac{n(n-1)(n-2)(n-3)}{6}}$$

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$\therefore \frac{1}{24} n(n-1)(n-2)(n-3)=\frac{1}{6}\Sigma(n-1)(n-2)(n-3),$

i.e. $\frac{1}{4} n(n-1)(n-2)(n-3)=\Sigma(n^3-6n^2+11n-6)$

$\therefore \Sigma n^3=\frac{1}{4}n(n-1)(n-2)(n-3)+6\Sigma n^2-11\Sigma n+6\Sigma 1$

$=\frac{1}{4}n(n-1)(n-2)(n-3)+n(n+1)(2n+1)-\frac{11}{2}n(n+1)+6n$

$$=\frac{n^2(n+1)^2}{4} \qquad (3)$$

In this way, Bernoulli found out formulae for the sums of the second, third, fourth,......powers of natural numbers. Some of these formulae are given here :—

1. $\sum_1^n n=\frac{1}{2}n^2+\frac{1}{2}n$

2. $\sum_1^n n^2=\frac{1}{3}n^3+\frac{1}{2}n^2+\frac{1}{6}n$

$\sum_1^n n^3=\frac{1}{4}n^4+\frac{1}{2}n^3+\frac{1}{4}n^2$

$\sum_1^n n^4=\frac{1}{5}n^5+\frac{1}{2}n^4+\frac{1}{3}n^3-\frac{1}{30}n$

$\sum_1^n n^5=\frac{1}{6}n^6+\frac{1}{2}n^5+\frac{5}{12}n^4-\frac{1}{12}n^2$

$\sum_1^n n^6=\frac{1}{7}n^7+\frac{1}{2}n^6+\frac{1}{2}n^5-\frac{1}{6}n^3+\frac{1}{42}n$

$\sum_1^n n^7=\frac{1}{8}n^8+\frac{1}{2}n^7+\frac{7}{12}n^6-\frac{7}{24}n^4+\frac{1}{12}n^2$

$\sum_1^n n^8=\frac{1}{9}n^9+\frac{1}{2}n^8+\frac{2}{3}n^7-\frac{7}{15}n^5+\frac{2}{9}n^3-\frac{1}{30}n$

It will be observed that the sum of the coeffs. in any line is 1. Thus, in $\Sigma n^4$, the sum of the coeffs. is

$$\frac{1}{5}+\frac{1}{2}+\frac{1}{3}-\frac{1}{30}=1.$$

In $\Sigma n^7$, the sum of the coeffs.

$$=\frac{1}{8}+\frac{1}{2}+\frac{7}{12}-\frac{7}{24}+\frac{1}{12}=1.$$

The general formula for $\Sigma n^p$ is

$$\sum_1^n n^p=\frac{1}{p+1}n^{p+1}+\frac{1}{2}n^p+\frac{p}{2}An^{p-1}+\frac{p(p-1)(p-2)}{\underline{|4}}Bn^{p-3}$$

$$+\frac{p(p-1)(p-2)(p-3)(p-4)}{\underline{|6}}Cn^{p-5}$$

$$+\frac{p(p-1)(p-2)(p-3)(p-4)(p-5)(p-6)}{\underline{|8}}Dn^{p-7}+\ldots\ldots,$$

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the series terminating at $n$ or $n^2$ as the case may be. The coeffs. A, B, C, D,......are the last coeffs. in the formula for $\Sigma n^2$, $\Sigma n^4$, $\Sigma n^6$ ,......Thus,

$$A=\tfrac{1}{6},\ B=-\tfrac{1}{30},\ C=\tfrac{1}{42},\ D=-\tfrac{1}{30},\ldots\ldots$$

These are the numbers which, in the modern terminology, are called Bernoulli Numbers, and are written thus:

$$B_2=\tfrac{1}{6},\ B_4=-\tfrac{1}{30},\ B_6=\tfrac{1}{42},\ B_8=-\tfrac{1}{30},\ldots\ldots$$

These numbers do not seem to follow any simple law. All that we can say is that they are rational numbers. The numbers $B_2$, $B_4$, $B_6$,...... $B_{62}$ were calculated by Ohm and published in Jour. f.d. reine angew Maths. 20 (1840). A table of these numbers up to $B_{124}$ was given by J. C. Adams in the same journal in 1878. It is worth noticing that $B_{120}$ has the denominator 2, 358, 255, 930 and the numerator a number with 113 digits. The denominator in $B_{122}$ is 6 while the numerator is a number with 107 digits.

It was thus that with the help of these numbers Bernoulli calculated the sums of powers of natural numbers. He mentioned the fact that the sum of the 10th powers of the first 1000 natural numbers was

91, 409, 924, 241, 424, 243, 424, 241, 924, 242, 500.

It would be worth while for students to check up this result. The labour is sure to pay them.

## 3. The Modern Approach

Let us start with the function

$$\frac{e^x-1}{x}=1+\frac{x}{\lfloor 2}+\frac{x^2}{\lfloor 3}+\frac{x^3}{\lfloor 4}+\ldots\ldots$$

This series converges for all finite values of $x$.

Now,
$$\frac{x}{e^x-1}=\frac{1}{1+\frac{x}{\lfloor 2}+\frac{x^2}{\lfloor 3}+\frac{x^3}{\lfloor 4}+\ldots\ldots}$$

$$=\left(1+\frac{x}{\lfloor 2}+\frac{x^2}{\lfloor 3}+\frac{x^3}{\lfloor 4}+\ldots\ldots\right)^{-1}.$$

We want to expand this function by the Binomial Theorem. For justification thereof it is necessary that $|x|<\rho$, where

$$\frac{\rho}{\lfloor 2}+\frac{\rho^2}{\lfloor 3}+\frac{\rho^3}{\lfloor 4}+\ldots\ldots\ldots \leqslant 1$$

This will certainly be the case if

$$\frac{\rho}{2}+\frac{\rho^2}{2.3}+\frac{\rho^3}{2.3^2}+\frac{\rho^4}{2.3^3}+\ldots\ldots=1,$$

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i.e. if
$$\frac{\frac{\rho}{2}}{1-\frac{\rho}{3}}=1, \text{ i.e. if } \rho=\frac{6}{5}=1.2$$

Let the expansion be

$$B_0+\frac{B_1}{\underline{|1}}x+\frac{B_2}{\underline{|2}}x^2+\frac{B_3}{\underline{|3}}x^3+\dots\dots\dots$$

Then, we have, for $|x|<1.2$,

$$\frac{1}{1+\frac{x}{\underline{|2}}+\frac{x^2}{\underline{|3}}+\frac{x^3}{\underline{|4}}+\dots\dots}=B_\circ+\frac{B_1}{\underline{|1}}x+\frac{B_2}{\underline{|2}}x^2+\frac{B_3}{\underline{|3}}x^3+\dots\dots\dots,$$

i.e.

$$\left(1+\frac{x}{\underline{|2}}+\frac{x^2}{\underline{|3}}+\frac{x^3}{\underline{|4}}+\dots\dots\right)\left(B_\circ+\frac{B_1}{\underline{|1}}x+\frac{B_1}{\underline{|2}}x^2+\frac{B_3}{\underline{|3}}x^3+\dots\dots\right)=1.$$

Equating coeffs. of like powers of $x$ we get

$$B_9=1,\ \frac{1}{\underline{|2}}B_\circ+\frac{1}{\underline{|1}}\ \frac{B_1}{\underline{|1}}=0,$$

$$\frac{1}{\underline{|3}}B_0+\frac{1}{\underline{|2}}\cdot\frac{B_1}{\underline{|1}}+\frac{1}{\underline{|1}}\cdot\frac{B_2}{\underline{|2}}=0,$$

$$\frac{1}{\underline{|4}}B_0+\frac{1}{\underline{|3}}\cdot\frac{B_1}{\underline{|1}}+\frac{1}{\underline{|2}}\cdot\frac{B_2}{\underline{|2}}+\frac{1}{\underline{|1}}\cdot\frac{B_3}{\underline{|3}}=0,$$

and, generally speaking,

$$\frac{1}{\underline{|n}}\cdot\frac{B_0}{\underline{|0}}+\frac{1}{\underline{|n-1}}\cdot\frac{B_1}{\underline{|1}}+\frac{1}{\underline{|n-2}}\cdot\frac{B_2}{\underline{|2}}+\dots\dots\frac{1}{\underline{|1}}\cdot\frac{B_{n-1}}{\underline{|n-1}}=0.$$

Multiplying by $\underline{|n}$, we get

$$\binom{n}{o}B_0+\binom{n}{1}B_1+\binom{n}{2}B_2+\dots\dots+\binom{n}{n-1}B_{n-1}=0.$$

If we had $B^p$ instead of $B_p$ we could write the same result in the elegant form

$$(B+1)^n-B^n=0.$$

We could take this as the recurrence formula for these numbers, called Bernoulli Numbers, with the stipulation that, after expanding it by the Binomial Theorem, the powers are to be replaced by suffixes.

For $n=2, 3, 4,\dots\dots$ our formula yields us the equations

$2B_1+1=0,$
$3B_2+3B_1+1=0,$
$4B_3+6B_2+4B_1+1=0,$
$5B_4+10B_3+10B_2+5B_1+1=0,$
$6B_5+15B_4+20B_3+15B_2+6B_1+1=0,$
..........................................................

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We already know that $B_0=1$.

And from the above eqns. we deduce that

$$B_1=-\tfrac{1}{2},\ B_2=\tfrac{1}{6},\ B_3=0,\ B_4=-\tfrac{1}{30},$$

$$B_5=B_7=B_9=B_{11}=0,$$

$$B_6=\tfrac{1}{42},\ B_8=-\tfrac{1}{30},\ B_{10}=\tfrac{5}{66},\ B_{12}=-\tfrac{691}{2730},\ldots\ldots$$

### Bernoulli's Theorem

The identity

$$\frac{e^{nx}-1}{e^x-1}\equiv 1+e^x+e^{2x}+\ldots\ldots\ldots+e^{(n-1)x}$$

is equivalent to

$$\frac{(e^{nx}-1)e^x}{e^x-1}\equiv e^x+e^{2x}+e^{3x}+\ldots\ldots+e^{nx}.$$

Hence

$$\left\{\frac{nx}{\lfloor 1}+\frac{n^2x^2}{\lfloor 2}+\ldots\ldots\frac{n^rx^r}{\lfloor r}+\ldots\ldots\right\}\left\{1+\tfrac{1}{2}x+\frac{B_2}{\lfloor 2}x^2+\ \frac{B_4}{\lfloor 4}x^4+,\ldots\ldots\right\}$$

$$=nx+\frac{x^2}{\lfloor 1}\sum_1^n n+\ \frac{x^3}{\lfloor 1}\sum_1^n n^2+\ldots\ldots\ldots+\frac{x^{r+1}}{\lfloor r}\sum_1^n n^r+\ldots\ldots$$

So long as $n$ is finite and $|x|<1.2$, all the series involved are absolutely convergent. Hence, equating coeffs. of $x^{r+1}$ we get

$$\frac{1}{\lfloor r}\sum_1^n n^r=\frac{n^{r+1}}{\lfloor r+1}+\frac{n^r}{\lfloor 2\lfloor r}+\frac{B_2n^{r-1}}{\lfloor 2\lfloor r-1}+\frac{B_4n^{r-3}}{\lfloor 4\lfloor r-3}+\frac{B_6n^{r-5}}{\lfloor 6\lfloor r-5}+\ldots\ldots,$$

$$\text{i.e. } \sum_1^n n^r=\frac{n^{r+1}}{r+1}+\tfrac{1}{2}n^r+\frac{r}{\lfloor 2}B_2n^{r-1}+\frac{r(r-1)\ (r-2)}{\lfloor 4}B_4n^{r-3}$$

$$+\frac{r(r-1)\ (r-2)\ (r-3)\ (r-4)}{\lfloor 6}B_6n^{r-5}$$

the series terminating at $n$ or $n^2$.

This was the theorem given in §2.

These investigations are mainly due to Euler. He was the first mathematician to have studied Bernoulli numbers from the analytical point of view.

---

## 4. Series for Trigonometrical Functions

Lemma. Let

$$\frac{1+a_2\ z^2+a_4\ z^4+a_6\ z^6+\ldots\ldots}{1+b_2\ z^2+b_4\ z^4+b_6\ z^6+\ldots\ldots}$$

be expansible in the form of a power series of the form

$$1+c_2\ z^2+c_4\ z^4+c_6\ z^6+\ldots\ldots$$



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Then we have

$$1+a_2 z^2+a_4 z^4+a_6 z^6+\ldots\ldots$$
$$=(1+b_2 z^2+b_4 z^4+b_6 z^6+\ldots\ldots)(1+c_2 z^2+c_4 z^4+c_6 z^6+\ldots\ldots). \quad (4.1)$$

If the series involved are absolutely convergent, equating coeffs. of like powers of $z$, we get

$$b_2+c_2=a_2,$$
$$b_4+b_2 c_2+c_4=a_4,$$
$$b_6+b_4 c_2+b_2 c_4+c_6=a_6,$$
$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$
$$b_{2p}+b_{2p-2} c_2+b_{2p-4} c_4+\ldots\ldots b_2 c_{2p-2}+c_{2p}=a_{2p}.$$

Now, if, in each of the three series involved in (4.1), we had signs alternately +ve. and −ve, the eqn. would assume the form

$$1-a_2 z^2+a_4 z^4-a_6 z^6+\ldots\ldots$$
$$=(1-b_2 z^2+b_4 z^4-b_6 z^6+\ldots\ldots)(1-c_2 z^2+c_4 z^4-c_6 z^6+\ldots\ldots)$$

Equating coeffs. of like powers of $z$, we shall get the same eqns. as the above. It follows that, for values of $z$ for which all the series involved are absolutely convergent, if

$$\frac{1+a_2 z^2+a_4 z^4+a_6 z^6+\ldots\ldots}{1+b_2 z^2+b_4 z^4+b_6 z^6+\ldots\ldots}=1+c_2 z^2+c_4 z^4+c_6 z^6+\ldots\ldots,$$

then also

$$\frac{1-a_2 z^2+a_4 z^4-a_6 z^6+\ldots\ldots}{1-b_2 z^2+b_4 z^4-b_6 z^6+\ldots\ldots}=1-c_2 z^2+c_4 z^4-c_6 z^6+\ldots\ldots$$

Now, starting with

$$\frac{x}{e^x-1} \equiv 1-\frac{x}{2}+\frac{B_2x^2}{\lfloor 2}+\frac{B_3x^3}{\lfloor 3}+\frac{B_4x^4}{\lfloor 4}+\ldots\ldots,$$

a result we have proved already, we get

$$\frac{x}{e^x-1}+\frac{x}{2}=1+\frac{B_2x^2}{\lfloor 2}+\frac{B_3x^3}{\lfloor 3}+\frac{B_4x^4}{\lfloor 4}+\ldots\ldots \quad (4.2)$$

But the left hand side

$$=\tfrac{1}{2}x\left(1+\frac{2}{e^x-1}\right)=\tfrac{1}{2}x.\frac{e^x+1}{e^x-1}=\frac{x}{2}.\frac{e^{\frac{x}{2}}+e^{-\frac{x}{2}}}{e^{\frac{x}{2}}-e^{-\frac{x}{2}}}$$

which is an even function.

It follows that the Bernoulli numbers of odd orders $B_3$, $B_5$, $B_7$,...... on the right hand side of (4.2) are all 0—a fact we have already observed under 2.

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Hence, substituting $2z$ for $x$ in (4. 2), we get

$$z.\frac{1+\frac{z^2}{\lfloor 2}+\frac{z^4}{\lfloor 4}+\frac{z^6}{\lfloor 6}+\ldots\ldots}{z+\frac{z^3}{\lfloor 3}+\frac{z^5}{\lfloor 5}+\ldots\ldots}=1+\frac{B_2}{\lfloor 2}(2z)^2+\frac{B_4}{\lfloor 4}(2z)^4+\frac{B_6}{\lfloor 6}(2z)^6+\ldots\ldots\ldots$$

The left hand side is the same as

$$\frac{1+\frac{z^2}{\lfloor 2}+\frac{z^4}{\lfloor 4}+\frac{z^6}{\lfloor 6}+\ldots\ldots}{1+\frac{z^2}{\lfloor 3}+\frac{z^4}{\lfloor 5}+\frac{z^6}{\lfloor 7}+\ldots\ldots\ldots}. \qquad (\alpha)$$

This gives us

$$z\coth z=1+\frac{B_2}{\lfloor 2}(2z)^2+\frac{B_4}{\lfloor 4}(2z)^4+\frac{B_6}{\lfloor 6}(2z)^6+\ldots\ldots$$

$$=1+\frac{1}{3}z^2-\frac{1}{45}z^4+\frac{2}{945}z^6-\frac{1}{4725}z^8+-\ldots\ldots\ldots, \qquad \text{(i)}$$

a formula valid for $|z|<\pi$.

Also by the lemma proved above, we have, from ($\alpha$),

$$z\cot z=\frac{1-\frac{z^2}{\lfloor 2}+\frac{z^4}{\lfloor 4}-\frac{z^6}{\lfloor 6}+-\ldots\ldots}{1-\frac{z^2}{\lfloor 3}+\frac{z^4}{\lfloor 5}-\frac{z^6}{\lfloor 7}+-\ldots\ldots}=1-\frac{B_2}{\lfloor 2}(2z)^2+\frac{B_4}{\lfloor 4}(2z)^4-\frac{B_6}{\lfloor 6}(2z)^6+\ldots\ldots,$$

which is the same as

$$z\cot z=1-\frac{2^2B_2}{\lfloor 2}z^2+\frac{2^4B_4}{\lfloor 4}z^4-\frac{2^6B_6}{\lfloor 6}z^6+-\ldots\ldots+(-1)^k\frac{2^{2k}B_{2k}}{\lfloor 2k}z^{2k}+\ldots\ldots$$

$$=1-\frac{1}{3}z^2-\frac{1}{45}z^4-\frac{2}{945}z^6-\frac{1}{4725}z^8-\ldots\ldots \qquad \text{(ii)}$$

where $|z|<\pi$. The numerical coeffs. are the same in (i) and (ii).

If we use the formula

$$\tanh z=2\coth 2z-\coth z,$$

we derive

$$\tanh z=\frac{B_2}{\lfloor 2}(2^4-2^2)z+\frac{B_4}{\lfloor 4}(2^8-2^4)z^3+\frac{B_5}{\lfloor 6}(2^{12}-2^6)z^5+\ldots\ldots$$

$$=z-\frac{1}{3}z^3+\frac{2}{15}z^5-\frac{17}{315}z^7+\ldots\ldots, \qquad \text{(iii)}$$

where $|z|<\frac{\pi}{2}$

Likewise, if we make use of the identity

$$\tan z=\cot z-2\cot 2z,$$

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we get a series for tan $z$ in the form

$$\tan z = \sum_{1}^{\infty} (-1)^{k-1} \frac{2^{2k}(2^{2k}-1)}{\lfloor 2k} B_{2k} z^{2k-1}$$

$$= z + \frac{1}{3} z^3 + \frac{2}{15} z^5 + \frac{17}{315} z^7 + \ldots\ldots, \qquad \text{(iv)}$$

where $|z| < \frac{\pi}{2}$.

The numerical coeffs. in (iii) and (iv) are the same.

We have not yet found out the radii of convergence of these series. We have assumed the radii which we shall establish later on. This remark applies to series (v) given below as well.

Using the formula

$$\cot z + \tan \frac{z}{2} = \frac{1}{\sin z}$$

we also deduce

$$\frac{z}{\sin z} = \sum_{0}^{\infty} (-1)^{k-1} \frac{(2^{2k}-2)}{\lfloor 2k} B_{2k} z^{2k}$$

$$= 1 + \frac{1}{6} z^2 + \frac{7}{360} z^4 + \frac{31}{15120} z^6 + \ldots\ldots\ldots, \qquad \text{(v)}$$

where $|z| < \pi$.

We shall prove later on that $B_{2r}$ has the sign of $(-1)^{r-1}$. Hence all the terms in the series for $z \cot z$ after the first one are $-$ve, while all the terms in the series for tan $z$ and $\frac{z}{\sin z}$ are $+$ve.

From (4.3) we get

$$\cot z = \tfrac{1}{2}\left(\cot \frac{z}{2} - \tan \frac{z}{2}\right),$$

or $$\cot \pi z = \tfrac{1}{2}\left(\cot \frac{\pi z}{2} + \cot \frac{\pi(z \pm 1)}{2}\right). \qquad (4.4)$$

Let $z$ be any real no., other than 0 or an integer. Then

$$\pi z \cot \pi z = \frac{\pi z}{2}\left[\cot \frac{\pi z}{2} + \cot \frac{\pi(z+1)}{2}\right].$$

Applying formula (4.4) to the two functions in brackets, taking the $+$ve sign with the first one and $-$ve sign with the other one we get

$$\pi z \cot \pi z = \frac{\pi z}{4}\left[\cot \frac{\pi z}{4} + \left\{\cot \frac{\pi(z+1)}{4} + \cot \frac{\pi(z-1)}{4}\right\} + \cot \frac{\pi(z+2)}{4}\right].$$

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Applying the same formula once more we get

$$\frac{\pi z}{8}\left[\cot\frac{\pi z}{8}+\left\{\cot\frac{\pi(z+1)}{8}+\cot\frac{(z+2)}{8}+\cot\frac{\pi(z+3)}{8}\right\}\right.$$
$$\left.+\left\{\cot\frac{\pi(z-1)}{8}+\cot\frac{\pi(z-2)}{8}+\cot\frac{\pi(z-3)}{8}\right\}+\cot\frac{\pi(z+4)}{8}\right]$$

Proceeding in the same way, after $n$ such steps we shall get

$$\pi z\cot\pi z=\frac{\pi z}{2^n}\left[\cot\frac{\pi z}{2^n}+\sum_{r=1}^{2^{n-1}-1}\left\{\cot\frac{\pi(x+r)}{2^n}+\cot\frac{\pi(x-r)}{2^n}\right\}+\cot\frac{\pi(z+2^{n-1})}{2^n}\right] \tag{4.5}$$

Now, we know that, if $p\neq 0$,

$$\underset{n\to\infty}{\text{Lt}}\ \frac{1}{2^n}\cot\frac{p}{2^n}=\frac{1}{p}\ \text{Lt}\left[\left(\cos\frac{p}{2^n}\right)\left(\frac{\frac{p}{2^n}}{\sin\frac{p}{2^n}}\right)\right]=\frac{1}{p}.$$

If we proceed to the limit, as $n\to\infty$, in (4.5), we get, at least formally,

$$\pi z\cot\pi z=1+z\sum_{r=1}^{\infty}\left(\frac{1}{z+r}+\frac{1}{z-r}\right)-0,$$

$$\text{as Lt}\quad \frac{\pi z}{2^n}\cot\frac{\pi(z+2^{n-1})}{2^n}=-\text{Lt}\frac{\pi z}{2^n}\tan\frac{\pi z}{2^n}$$

$$=-\text{Lt}\,\frac{n^2z^2}{2^{2n}}\left[\frac{\text{Sin}\,\frac{\pi z}{2^n}}{\frac{\pi z}{2^n}}\cdot\frac{1}{\cos\frac{\pi z}{2^n}}\right]=0.$$

Hence $$\pi z\cot\pi z=1+2z^2\sum_{r=1}^{\infty}\frac{1}{z^2-r^2}. \tag{4.6}$$

We have to justify the procedure of taking the limit, term by term, in (4.5).

First of all, we observe that the series in (4.6) converges absolutely as each term is comparable with $\frac{1}{z^2}$. Now, choose an arbitrary integer $q>6|z|$. If $n$ is large enough to make $2^{n-1}-1$ (for which we shall write $m$)$>q$, we can split up the expn. in (4.5) into two parts thus

$$\pi z\cot\pi z=\frac{\pi z}{2^n}\left[\cot\frac{\pi z}{2^n}-\tan\frac{\pi z}{2^n}+\sum_{r=1}^{q}\left\{\cot\frac{\pi(x+r)}{2^n}+\cot\frac{\pi(x-r)}{2^n}\right\}\right]$$
$$+\frac{\pi z}{2^n}\sum_{r=q+1}^{m}\left\{\cot\frac{\pi(x+r)}{2^n}+\cot\frac{\pi(x-r)}{2^n}\right\}.$$

If we denote the two parts of this expn. by $K_n$ and $L_n$, in $K_n$ we may certainly proceed to the limit as it contains only a finite no. of terms. Thus we get

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$$\underset{n\to\infty}{\mathrm{Lt}}\, K_n = 1 + 2z^2 \sum_{r=1}^{q} \frac{1}{x^2 - r^2}$$

Also, $L_n = \pi z \cot \pi z - K_n = \pi z \cot \pi z - \left[ 1 + 2z^2 \sum_{r=1}^{q} \frac{1}{x^2 - r^2} \right]$

Hence $\underset{n\to\infty}{\mathrm{Lt}}\, L_n$ certainly exists.

Now, we have

$$\cot\frac{\pi(z+r)}{2^n} + \cot\frac{\pi(z-r)}{2^n} = \cot(\alpha+\beta) + \cot(\alpha-\beta), \text{ say.}$$

$$= \frac{\cos(\alpha+\beta)}{\sin(\alpha+\beta)} + \frac{\cos(\alpha-\beta)}{\sin(\alpha-\beta)} = \frac{\sin 2\alpha}{\sin(\alpha+\beta)\sin(\alpha-\beta)} = \frac{2\sin\alpha\cos\alpha}{\cos 2\beta - \cos 2\alpha}$$

$$= \frac{2\sin\alpha\cos\alpha}{\sin^2\alpha - \sin^2\beta} = \frac{-2\cot\alpha}{\dfrac{\sin^2\beta}{\sin^2\alpha} - 1}$$

Now,

$$2^n > 2(q+1) > 2(6|z|+1). \quad \therefore |\alpha| = \left|\frac{\pi z}{2^n}\right| < 1.$$

Hence

$$|\sin\alpha| = \left|\alpha - \frac{\alpha^3}{\underline{|3}} + \ldots\ldots\right| \leqslant |\alpha| \left(1 + \frac{1}{\underline{|3}} + \frac{1}{\underline{|5}} + \ldots\ldots\right) < 2|\alpha|.$$

$$\text{Also, } \beta = \frac{\pi r}{2^n}. \quad \therefore 0 < \beta < \frac{\pi}{2} < 2.$$

$$\text{So, } \sin\beta = \beta\left(1 - \frac{\beta^2}{2.3}\right) + \frac{\beta^5}{\underline{|5}}\left(1 - \frac{\beta^2}{6.7}\right) + \ldots\ldots$$

Since the expn. within every bracket is +ve,

$$\sin\beta > \beta\left(1 - \frac{\beta^2}{2.3}\right) > \beta\left(1 - \frac{2^2}{2.3}\right) = \frac{\beta}{3}.$$

$$\therefore \left|\frac{\sin\beta}{\sin\alpha}\right| > \frac{\beta}{6|\alpha|} = \frac{\pi r}{6.2^n}.\ \frac{2^n}{\pi|z|} = \frac{r}{6|z|} \geq \frac{q+1}{6|z|} > 1.$$

It follows that, for $r > q$,

$$\left|\cot\frac{\pi(z+r)}{2^n} + \cot\frac{\pi(z-r)}{2^n}\right| = \frac{2|\cot\alpha|}{\left|\dfrac{\sin^2\beta}{\sin^2\alpha} - 1\right|} \leqslant \frac{2\left|\cot\dfrac{\pi z}{2^n}\right|}{\dfrac{r^2}{36z^2} - 1}$$

$$\therefore |L_n| \leqslant \left|\frac{\pi z}{2^n}\cot\frac{\pi z}{2^n}\right| \sum_{r=q+1}^{m} \frac{72z^2}{r^2 - 36z^2}.$$

Now,

$$|z\cot z| = \frac{\left|1 - \dfrac{z^2}{\underline{|2}} + \dfrac{z^4}{\underline{|4}} \ldots\ldots\right|}{\left|1 - \dfrac{z^2}{\underline{|3}} + \dfrac{z^4}{\underline{|5}} \ldots\ldots\right|} < \frac{1 + \dfrac{1}{\underline{|2}} + \dfrac{1}{\underline{|4}} + \ldots\ldots}{1 - \dfrac{1}{\underline{|3}} - \dfrac{1}{\underline{|5}} + \ldots\ldots} < 3;$$

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Close approximations of the value are certainly possible but they are not needed here.

Thus $|L_n| < 216z^2 \sum_{r=q+1}^{m} \frac{1}{r^2-36z^2} < 216\, z^2 \sum_{r=q+1}^{\infty} \frac{1}{r^2-36z^2}$

The Right hand side is independent of $n$. Hence

$$|\text{Lt. } L_n| \leqslant 216\, z^2 \sum_{r=q+1}^{\infty} \frac{1}{r^2-36\, z^2}.$$

But the Right hand side is the remainder after $q$ terms of a convergent series as the terms are comparable with those of $\Sigma \frac{1}{z^2}$. Hence it $\to 0$ as $q \to \infty$.

$\therefore\ |\text{Lt } L_n| \to 0,$

$$\underset{q\to\infty}{\text{Lt}} \left[\pi z \cot \pi\, z - \left\{1+2z^2 \sum_{r=1}^{q} \frac{1}{z^2-r^2}\right\}\right]=0\ ,$$

*ie.* $\pi\, z \cot \pi\, z = 1+2\, z^2 \sum_{r=1}^{\infty} \frac{1}{z^2-r^2}.$

Thus this formula is true for all real value of $z$ except 0 and an integer.

Making use of the formula

$$\pi \tan \frac{\pi z}{2} = \pi \cot \frac{\pi z}{2} - 2\pi \cot \pi z,$$

we also deduce

$$\pi \tan \frac{\pi z}{2} = \sum_{r=o}^{\infty} \frac{4}{(2r+1)^2-z^2}$$

$$= 2 \sum_{r=o}^{\infty} \left(\frac{1}{2r+1-z} - \frac{1}{(2r+1)+z}\right) \qquad (4.7)$$

This formula is true for $z \neq 0, \pm 1, \pm 2, \pm 3, \pm 4, \ldots\ldots$

But if we take an even integral value of $z$, the series vanishes. Hence (4.7) is valid for all $z$ except $\pm 1,\ \pm 3,\ \pm 5, \ldots\ldots$

Using

$$\frac{1}{\sin z} = \cot z + \tan \frac{z}{2},$$

we also get

$$\frac{\pi}{\sin \pi z} = \frac{1}{z} - + 2z \sum_{1}^{\infty} \frac{(-1)^{r-1}}{r^2-z^2} = \frac{1}{z} + \left(\frac{1}{1-z} - \frac{1}{1+z}\right) - \left(\frac{1}{2-z} - \frac{1}{2+z}\right) + \ldots,$$

a formula true for $z \neq 0,\ \pm 1,\ \pm 2,\ \pm 3, \ldots\ldots$

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Putting $\frac{1}{2}-z$ for $z$, we get

$$\frac{\pi}{\cos \pi z} = \sum_{0}^{\infty} \frac{(-1)^r (2r+1)r}{\left(\frac{2r+1}{2}\right)^2 - z^2},$$

a formula true for $z \neq \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{5}{2}, \ldots\ldots$

## 5. Sums of powers of natural numbers

Eqn. (ii) of §4 gives us

$$nz \cot \pi z = 1 + \sum_{1}^{\infty} (-1)^n \frac{2^{2n} B_{2n}}{\lfloor 2n} \pi(z)^{2n}$$

Equating this to the series for $\pi z \cot \pi z$ given by (4.6) we get

$$1 + \sum_{1}^{\infty} (-1)^n \frac{2^{2n} B_{2n}}{\lfloor 2n} (\pi z)^{2n} = 1 - 2z^2 \sum_{r=1}^{\infty} \frac{1}{r^2 - z^2} \tag{5.1}$$

Now, for each fixed integral value of $r$,

$$-\frac{2z^2}{r^2 - z^2} = -\sum_{n=1}^{\infty} 2 \left(\frac{z^2}{r^2}\right)^2 \tag{5.2}$$

As this series is absolutely convergent for $|z| < 1$, it follows that the series on the left hand side of (5.1) is absolutely convergent for $|z| < 1$, so that the series (ii) of §4 is absolutely convergent for $|z| < \pi$. And it cannot be absolutely convergent for $|z| > \pi$ for then cot $z$ would become continuous for $z = \pi$ which it is not. It follows that the radius of absolute convergence for the series (ii) is exactly $\pi$. This fact can be established in other ways too.

It may now be deduced that the corresponding radii for series (iii) and (iv) are $\frac{\pi}{2}$ and that for (v) is $\pi$.

If we substitute each term on the right hand side of (5.1) by the series (5.2) we get a double series which is absolutely convergent. Hence we may equate coeffs. of like powers of $z$ on the two sides of the eqn. Thus, for any fixed $p$ we get

$$\sum_{n=1}^{\infty} \frac{1}{n^{2p}} = (-1)^{p-1} \frac{B_{2p} (2\pi)^{2p}}{2 \lfloor 2p} \tag{5.3}$$

i.e. $$\frac{1}{1^{2p}} + \frac{1}{2^{2p}} + \frac{1}{3^{2p}} + \ldots\ldots = (-1)^{p-1} \frac{B_{2p} (2\pi)^{2p}}{2 \lfloor 2p}$$

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From this we conclude that $(-1)^{n-1}\ B_{2n}$ is +ve and that the numbers $B_{2n}$ are alternately +ve and −ve.

Also, as $\sum_{r=1}^{\infty} \frac{1}{r^{2n}}$ lies bet. 1 and 2, we have

$$\frac{2\ \lfloor 2n}{(2n)^{2n}} < (-1)^{n-1}\ B_{2n} < 2.\frac{2\ \lfloor 2n}{(2\ \pi)^{2n}}$$

Hence $\left|\frac{B_{2n+2}}{B_{2n}}\right| \to +\infty$, so that we deduce the important result that the numbers $B_{2n}$ increase rapidly as $n$ increases.

Now, for particular values of $p$ we get, from (5.3),

$$\frac{1}{1^2}+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\dots\dots\dots\dots=\frac{\pi^2}{6},$$

$$\frac{1}{1^4}+\frac{1}{2^4}+\frac{1}{3^4}+\frac{1}{4^4}+\dots\dots\dots\dots=\frac{\pi^4}{90},$$

$$\frac{1}{1^6}+\frac{1}{2^6}+\frac{1}{3^6}+\frac{1}{4^6}+\dots\dots\dots\dots=\frac{\pi^6}{945},$$

$$\frac{1}{1^8}+\frac{1}{2^8}+\frac{1}{3^8}+\frac{1}{4^8}+\dots\dots\dots\dots=\frac{\pi^8}{9450},$$

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It is interesting to note that both James and John Bernoulli tried hard to sum the series

$$\frac{1}{1^2}+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\dots\dots$$

James did not succeed in his attempt and died. Euler solved the problem in 1736.

The formula (5.3) gives the sum of every harmonic series with an even integral index. It does not say anything about a harmonic series with an odd integral index. Of course, such series can always be summed upto any required degree of approximation. Stieltjes has evaluated such series upto the index 70, correct to 32 places of decimals.

But the series $\sum_{r=1}^{\infty} \frac{1}{n^{2p}}$ can be split up into two series

$$\sum_{r=1}^{\infty} \frac{1}{(2r-1)^{2p}}+\sum_{r=1}^{\infty} \frac{1}{(2r)^{2p}}.$$



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And the latter series is the same as

$$\frac{1}{2^{2p}} \sum_{1}^{\infty} \frac{1}{r^{2p}}.$$

Hence $$\sum_{r=1}^{\infty} \frac{1}{(2r-1)^{2p}} = \sum_{1}^{\infty} \frac{1}{n^{2p}} - \frac{1}{2^{2p}} \sum_{1}^{\infty} \frac{1}{n^{2p}} = \frac{2^{2p}-1}{2^{2p}} \sum_{1}^{\infty} \frac{1}{n^{2p}}.$$

*ie.* $$1 + \frac{1}{3^{2p}} + \frac{1}{5^{2p}} + \frac{1}{7^{2p}} + \ldots \ldots = (-1)^{p-1} \frac{2^{2p}-1}{2^{2p}} B_{2p} \pi^{2p}. \qquad (5.4)$$

Giving particular values to $p$ we get

$$1 + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + \ldots\ldots = \frac{\pi^2}{8},$$

$$1 + \frac{1}{3^4} + \frac{1}{5^4} + \frac{1}{7^4} + \ldots\ldots = \frac{\pi^4}{96},$$

$$1 + \frac{1}{3^6} + \frac{1}{5^6} + \frac{1}{7^6} + \ldots\ldots = \frac{\pi^6}{960},$$

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If we again subtract the same series

$$\sum_{1}^{\infty} \frac{1}{(2n)^{2p}} \text{ from (5.4) we get}$$

$$\sum_{1}^{\infty} \frac{1}{(2n-1)^{2p}} - \sum_{1}^{\infty} \frac{1}{(2n)^{2p}} = \left(1 - \frac{2}{2^{2p}}\right) \sum_{1}^{\infty} \frac{1}{n^{2p}}.$$

*ie.* $$1 - \frac{1}{2^{2p}} + \frac{1}{3^{2p}} - \frac{1}{4^{2p}} + - \ldots\ldots$$

$$= (-1)^{p-1} \frac{2^{2p-1}-1}{\underline{|2p}} B_{2p} \pi^{2p}.$$

In particular, we deduce

$$1 - \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + - \ldots\ldots = \frac{\pi^2}{12},$$

$$1 - \frac{1}{2^4} + \frac{1}{3^4} - \frac{1}{4^4} + - \ldots\ldots = \frac{7\pi^4}{720},$$

$$1 - \frac{1}{2^6} + \frac{1}{3^6} - \frac{1}{4^6} + - \ldots\ldots = \frac{31\pi^6}{30240}.$$

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# TASAR SILK INDUSTRY IN INDIA

A. B. MISRA

## Introduction

The tasar silk industry of India is of a long standing. The silk is produced by an insect which feeds on the leaves of *Asan*, *Arjun*, *Sal*, *Ber* and on other kinds of leaves. This insect has not yet been domesticated like the mulberry or the eri silk-worm. There is sufficient demand for tasar cloth, but, due to the lack of organization, the industry is in a neglected state. The rearing of the tasar worms is in the hands of tribes, living in the jungles, who collect the cocoons and sell them to the dealers engaged in this trade. The industry is ever in a precarious state because the rearers give up this work as soon as they fined a more lucrative occupation. The rearing of worms is carried on, more or less, as a subsidiary occupation and no one, therefore, takes to it seriously. The weavers generally purchase the cocoons from the middlemen or *arhatiyas*, get them reeled by their women folk in their leisure hours and themselves weave the thread into cloth. The rearers and the weavers are often indebted to the *Mahajans*, silk merchants or master weavers, on account of having borrowed money from them, and are, therefore, compelled to accept whatever price is offered to them for the cocoons or the finished goods.

## Value of the Tasar Silk Produced

Bihar and Orissa produce about 4,00,000 lbs. of tasar silk annually valued at 6 lacs of rupees. The Central Provinces produce about 1,60,000 lbs. of silk worth about two and a half lacs of rupees. The yield from Mirzapur and the Banaras State amounts to about 1,000/- rupees.

Bihar alone produces tasar cocoons of the value of 3½ lacs of rupees annually.

## Food Plants of the Tasar Worms

Asan (*Terminalia tomentosa*), Arjun (*Terminalia arjuna*), and Sal (*Shorea robusta*) are the favourite food plants of the tasar worms. They are also reared on Sidha (*Lagerstroemia parviflora*), Blackberry (*Eugenia jambolana*), Plum (*Ziziphus jujuba*), Fig (*Ficus glomerata*), Country almond (*Terminalia catappa*), Bahera (*Terminalia bellarica*), Simul (*Bombax malabaricum*), Mahua (*Bassia latifolia*), Karaunda (*Carissa carandas*), Pipal

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(*Ficus religiosa*), Phurus (*Lagerstroema indica*), Joel (*Odina wodier*), Hamisabiti (*Mitragyana parviflora*), Teak (*Tactova grandis*), Sanai (*Crotolan jameca*), Patua ( ? ), Arhar (*Cajanus indica*), Myrobolam (*Terminalia chebula*), Mango (*Mangifera indica*).

### Plantation of Food Plants

At first, the ground is tilled and levelled, and saplings are planted 20 feet apart. They are allowed to grow up to a height of six or seven feet, and then transplanted after the rainfall. They are polarded in alternate years and thinly pruned every year about six weeks before the commencement of the rearing season. Worms are reared on them only when the trees are 4 or 5 years' old. A plantation is divided up into coups which are used by rotation.

### Tribes engaged in this avocation and their number

The Santhals, Hos, Pahariyas, Mal Pahriyas and the like are usually engaged in rearing the tasar worms as a subsidiary occupation. There are about 60,000 rearers in Bihar alone. All of them, however, do not rear the worms every year. The average annual production of cocoons by a rearer is about two and a half *kharies* (or 3200) of cocoons. An individual can easily look after 100 trees and rear worms on them.

### Centres of Production and Consumption

The cocoons produced in Bihar are marketed to Singhbhum, Giridih, Amrapara, Kathikund, Godda and to a few other places. Bengal and the Central Provinces consume nearly 75 per cent of these cocoons, the remainder being reeled and spun within the province by the weavers. Generally the women help the menfolk in the work; the former reeling and spinning the cocoons, and the latter weaving the yarn into cloth.

The principal centres of production of cocoons are Singhbhum, Manbhum, Hazaribagh, Ranchi, Palamau and the Santhal Parganas in Bihar; Sambalpur Sonpur, Mamra, Mayurbhanj, Dhankenal in Orissa; Chanda, Bilaspur, Bhandara, Balaghat, Seoni and Raipur in the Central Provinces and Mirzapur and Banaras *State* in Uttar Pradesh.

Tasar cloth is generally in demand in the markets of Bhagalpur, Gaya, Manbhum, Singhbhum, the Santhal Pargannas in Bihar; Cuttuck, Puri, and Balasore in Orissa; Bankura, Birbhum, Burdwan, Midnapur and Hooghly in W. Bengal; Bilaspur, Chanda, Bhandara, in the Central Provinces and Mirzapur and Banaras in the Uttar Pradesh.

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## All About the Tasar Silkworm

The tasar silkworm (*Antheraoa paphia*) belongs to the same Genus as the '*muga* worm' of Assam, the '*Yamamai*' of Japan and the '*Sakusan*' of China. The home of the Indian tasar moth is, in all probability, in the Singhbhum district of the Chota Nagpur Division. But it is not confined to this district alone, since it is found in Orissa, the Central Provinces and in certain parts of Bengal and the Uttar Pradesh. There are three different races of this moth, one of which is univoltine.

The cocoons of these variants differ in respect of size and shape, texture of the cocoon, length of the peduncle and colour. The moths eclose from the cocoons in April/May, June/July, August/September or at any other time between October and March. Cocoons obtained from Sal trees are considered to be the best of all. *Santhals*, *Kols*, *Hos*, *Bhils* *a*and *Paharias* generally rear tasar worms in the forests of the Central Provinces, Chota Nagpur, Bihar and Orissa. They travel to distant places for purchasing the wild stocks of cocoons. It is, however, a noteworthy fact that moths from the Semi domesticated stocks emerge more regularly than those from the wild ones.

Singhbhum is regarded to be the centre of production of best quality cocoons, but rearers often go even to the Mayurbhanj State for obtaining them. The rearers still collect wild cocoons from different and not unoften distant localities like Manoharpur, Chaibassa, Chakrádharpur and Chakulia in Singhbhum district and Giridih in Hazaribagh district. It is difficult to procure large quantities of good seed cocoons at one place and the villagers have, therefore, to wander about in search of them from place to place.

The usual practice is to tie the seed cocoons to a pole or a line by means of cotton thread. The male moths fly away on emerging out of the cocoons, but the females remain sitting on them. They are visited by the males at night and are inseminated by them. The fertilized moths are then transferred to earthenware pots in which they deposit eggs. Sometimes moths are kept in *Donias* or cups made out of leaves for the purpose of securing the eggs. The moths are left undisturbed for three or four days to allow them to lay eggs, then they are picked up and discarded, and the eggs scraped off and kept in fresh cups made of the same material.

The female moth is large bodied and brilliantly yellow coloured, while the male is relatively smaller in size and of a brick-red colour, and lives only for four to five days after emergence. Unfertilized females also sometimes lay eggs which, however, do not hatch. Different stocks of tasar moths have inter-bred with one another in the wild state, and, consequently, the

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timing of their emergence from the cocoons is irregular and uncertain. The error in timing can now be righted only by carefully planned selection of a given stock with reference to this factor. Cocoons of a breed also differ in shape and size as well as in respect of the length of the peduncle which shows that a great field of genetical research lies unexplored before us.

When the worms come out of the eggs they are transferred to their favourite host trees untouched by hand. A newly hatched worm is covered with clusters of black hair and each worm measures, on an average, about 5/16th of an inch in length. The head of the worm is black and the body yellow in colour. A day later, the body acquires a light yellow colour and the worm lenghthens to 7/16th of an inch. The colour of the body changes into light yellowish-green when the worm reaches 9/16th of an inch in length. After the first moult, the colour of the body turns green, the tubercles become red and the head brownish black. After the second moult, the tubercles become yellow and the body assumes a light green colour and measures nearly an inch in length. The length of the caterpillar, before the third moult, is about 1½ inches but increases to 1¾ inches after it. After the fourth moult, the colour of the body remains green but ten silvery dots appear on the lateral sides of the 5th, 6th, 8th, 9th and the 10th segments just above the spiracles, and two rows of golden yellow dots on both sides of the dorsal vessel in segments 2 to 10. The antennae are tinged green.

A guard is kept on these trees during the day and it has been computed that one man can look after 100 trees or more. The worms feed on the leaves of the host plants, grow in size and become mature in about 40 days when they spin cocoons on the branches of the trees. Scare crows, bows and pellets are often used for scaring away the insectivorous birds. When the cocoons are made, they are plucked and kept in baskets for further development.

Some broods are reared in June/July, some in August/September and others in October/November.

LIFE-CYCLE CHART OF THE TASAR MOTH WHEN REARED IN THE OPEN AIR

| Stage | Date | Duration |
|---|---|---|
| 1. Oviposition | 7th October | ... |
| 2. Hatching of the caterpillar | 15th October | 8 days |
| 3. First moult | 20th October | 5 days |
| 4. Second moult | 27th October | 7 days |
| 5. Third moult | 4th November | 8 days |
| 6. Fourth moult | 11th November | 7 days |
| 7. Spinning of cocoon | 24th November | 13 days |
| 8. Emergence of moth | 15th February | 83 days |
| | Total duration of the life-cycle of the tasar moth | 131 days |

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LIFE-CYCLE CHART OF THE TASAR MOTH WHEN REARED INDOOR

| Stage | Date | Duration |
|---|---|---|
| 1. Oviposition | 11th September | ... |
| 2. Hatching of the caterpillar | 22nd September | 11 days |
| 3. First moult | 27th September | 5 days |
| 4. Second moult | 1st October | 4 days |
| 5. Third moult | 6th October | 5 days |
| 6. Fourth moult | 11th October | 5 days |
| 7. Spinning of cocoon | 18th November | 38 days |
| 8. Emergence of moth | 23rd December | 35 days |
| | Total duration of the life-cycle of the tasar moth | 103 days |

Hundred full-sized trees of about ten years' age are known to yield about 5,000 cocoons. The price of 1,250 cocoons varies from 10 to 20 rupees. On this basis, 5,000 cocoons will fetch 40/- to 80/- rupees to the rearer. If the rearer decides to reel his cocoons, and to make cloth from the thread, he can earn Rs. 50/-.

### QUALITIES OF THE TASAR FILAMENT

On an average, nearly 1,500 feet of reelable filament is obtained from a tasar cocoon. The titre of one filament, measuring 450 metres in length, is approximately 14. The tenacity and percentage of elasticity of a filament are about 30 grammes and 33 per cent respectively.

### DISEASES AFFECTING TASAR WORMS

The alimentary canal of the tasar worm contains the eggs and caterpillars of several species of moths, which usually deposit their eggs upon the leaves upon which these worms fead. The fluid in the alimentary canal shows acid reaction and Diplococci and Micrococci are also found in it.

The tasar worms are seldom attacked by *Pebrine*. They, however, often show symptoms of Flacherie in one form or another. *Flacherie* and *Grasserie* are the chief diseases affecting tasar worms which may kill off all the worms belonging to a brood.

### ANIMALS HARMFUL TO TASAR WORMS

Injury to the tasar worms is also caused by *Canthecona fincellatta* (Pentatomidae), tachnid fly, Hierodula westwoodi (Mantidae), ants and hornets. Crows, kites, bats, rats, squirrels and lizards have also been observed to devour them.

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### Attempts at Improvement

As a result of scientific breeding conducted on selective lines univoltine, bivoltine and trivoltine races of moths have been isolated. But emergence is still very irregular in these stocks, which means that further inbreeding and selection of moths is needed to fix these variants with respect to the timing of their emergence.

Tasar moth has been domesticated, more or less, completely from the eggs to adult stage in Bhagalpur. Commencing with the so-called pure wild stock, the males and the females have been mated in captivity, lots of eggs reared separately, cocoons selected with reference to certain characters and the progeny reared on the Mendelian lines through four generations. Three different 'biological races' or 'strains' of the tasar moth have been thus isolated by a process of scientific selection; one of which is univoltine, another bivoltine and the third trivoltine. The periodicity of the emergence of moths from the cocoons, even in a given lot, is generally irregular which shows that these 'races' or 'strains' of moths are still far from having been "fixed". Tasar worms have been reared even in trays like the eri and the mulberry worms or else the twigs have been kept in jars containing a little water at the bottom.

A Central Tasar Rearing Nursery was started at Chaibassa in 1907 by the Government of Bengal for demonstrating scientific methods of rearing worms to those interested in it and for distributing heealthy eggs to the rearers, but was closed down in 1911.

Another nursery was started by the Governmet of the Central Provinces in 1907 at Chanda but was abandoned after a trial of 4 or 5 years.

Messrs Louis Paygne and Co. started tasar filatures at Bazurpara and Narainpur in Bengal for reeling tasar cocoons and for exporting the raw silk to France, but they had to give up this venture as it could not be run by them on a profitable line.

A Weavers' Co-operative Society was started at Bhagalpur for lending money to the weavers and buying the tasar cloth from them on slightly advantageous terms, but it went into liquidation after struggling for existence for about ten years.

### Processing of the Cocoons

The peduncles of the tasar cocoons are removed and the cocoons are then dipped in 1% hydrochloric acid solution overnight. Next day, they are taken out of it, kneaded with one *tola* of washing soda and placed in



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an earthen pot, the bottom of which is perforated at severalp laces so that steam can easily be admitted into its interior. Another similar earthen pot is filled with 8 to 10 seers of water, 1½ *tola* of washing soda is added to it and the pot placed over a slow fire. The pot containing the cocoons is placed over this and covered with a lid which is secured with plaster so as to prevent the steam from escaping out. Steam from the lower pot enters the other vessel and the cocoons become steamed in about 3 to 5 hours. Under-cooked cocoons, if any, are steamed again for a short while and then reeled in the usual way. After being steamed, the cocoons are washed with clear water, placed in a dry cloth bag, and excess of water removed from the cocoons. Then five filaments from five separate cocoons are twisted together and wound upon a spindle which is turned by one hand. A workman can reel 500 cocoons in a fortnight.

Tasar filaments do not adhere so well as the filaments of mulberry silk. Adhesion is, therefore, secured by treating the filaments with a special gummy preparation. Tasar cocoons can be reeled slowly on the same machines as are used for reeling mulberry cocoons. In reeling tasar cocoons a little of dry ash is used for absorbing the water adhering to the filaments. Reeling should be done slowly and carefully or else there is a tendency on the part of the filaments to form intangible clusters and knots.

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# PLANT HORMONES—OLDER CONCEPTS AND MODERN DEVELOPMENTS

R. S. CHOUDHRI AND O. K. GARG

The insatiable nature of human being provides an emanation of active efforts that kindles his lust for knowledge. This has led to many advances—unrealised and unrivalled—in all phases of life. Needless to mention that some of these advances have completely revolutionised the very concept of life and have unfolded many secrets of nature. Among these, the discovery of the compounds of hormonal nature—the plant or phyto-hormones may be cited as unique in the realm of biological science. The varied responses elicited in plants on the application of these substances have formed a subject of considerable interest, both for scientists and the laymen.

The story of compounds of hormonal nature—also called growth or plant regulating substances, is one of the interesting chapters in the science of to-day. The development of the knowledge of auxins, like all other major scientific discoveries originated in experimental enquiries by scientists seeking answers to fundamental querries. It came from not as a sudden revelation to a single man's observation or experimentation, but as a gradual unfolding to extensive experimentations by a large number of individuals over a long period of years.

In and before the eighteenth century, the biological sciences were predominantly descriptive with only here and there some remarkable inroads by the use of experimental methods, such as those, made by Stephen Hale and Jan Ingenhousz. It is here that we find the first beginning of a hormone concept, though merely descriptive, without any vestige of experimental evidence.

In 1758, Duhamel Du Monceau, one of the great French horticulturist made the descending sap in plants responsible for root formation. He noted that when the stems of plants were constricted as by girdling or ringing, often a swelling occurred just above the constriction and the roots were induced to form in this region.

It was only in the nineteenth century, after a long period of contemplation, that Botany unfolded itself into an experimental science. It was

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then that Charles Darwin (1881) turned his brilliant mind to the study of plant movement and tropisms when the first glimmering of the existence of a growth hormone was revealed. He demonstrated that when seedlings were exposed to lateral light, some sort of influence transmitted from the upper to the lower part, causing the latter to bend.

Almost at the same time, when Darwin was engaged in studying the nature of phototropic stimulus, it was largely the genius and untiring work of Julius Sachs (1880) which led to the clarification of the picture of life processes in plants. He launched the first theory of substances controlling growth. It was he who showed the existence of an organ forming substance moving in various polar patterns, and controlling the form and development of plants.

After this first phase, in which from many different angles evidence for the existence of a 'correlation carrier' in plants was adduced, and after the first reaction to this in the form of negations, a period of consolidation started. Many investigators, prominent amongst them being J. Loeb and H. Fitting (1907), accumulated facts, which demonstrated the action of these 'correlation carriers.' These facts, however, remained long isolated to be integrated only during the course of last twenty years or so.

Loeb, the zoologist, was fascinated with the phenomenon of regeneration of buds on severed leaves of *Bryophyllum* species and for years after experimentation with them he concluded that regeneration, as also the geotropic response of the stems and the outgrowths of the axillary buds were all regulated by plant hormones. As, however, it was impossible at this stage to have direct evidence concerning the nature of this agent, he rejected the idea and contrariwise, assumed that all such observations were but an expression of a mass action of a food constituent.

Work of Fitting, on the other hand, gave birth to the development of certain opposite ideas. In an extensive research concerning the transmission of tropistic stimulii in the *Avena* coleoptile, he disregarded any suggestion that plant movements could in any way be accomplished by any chemical means. He believed that light induces a polarisation in cells which is transmitted from cell to cell. According to him, this was true even in case of complicated incisions, if there existed a continuous linear connection in between the stimulated and the reacting cells. Observations of Fitting were, thus, different from those of Darwin and other earlier workers and they seemed to disapprove the existence of a 'correlation

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carrier.' In his later experiments, with the flower orchids, carried out at Buitenzorg, Java, Fitting found that the swellings of ovary and fading of flowers after pollination were due to a water-soluble, heat-stable substance present in the pollinia and which be compared with a hormone.

Findings of Darwin and Fitting aroused considerable interest in this field and eventually led to similar studies in other parts of the world. Boysen-Jensen (1913) observed that although the severing of the oat coleoptile tip removed phototropic sensitivity, replacement of the same tip restored the sensitivity again. To explain the transmission of the stimulus, Boysen-Jensen realised the existence of a concentration gradient of substances which could pass a cut and which could produce the electrical gradient in the base of the coleoptile.

The starting point of plant hormone or growth substance investigations was, thus, the demonstration of a growth-promoting material in the tip of the *Avena* coleoptile many years ago. Pioneer contributions in this regard were subsequently made by Paál (1914, 1918), Stark (1916-27), Seubert (1924, 1925) and Went (1927, 1928).

Paál—the Physiologist at Budapest, through repeated experimentations, not only confirmed the findings of Boysen-Jensen, but contributed a good deal towards the solution of a crucial point. He found that the replacement of the severed tip on one side of the coleoptile stump in *Avena* would produce curvatures away from the treated side. He, thus, not only provided an explanation to the phenomenon of tropism but demonstrated and confirmed the existence of a substance or 'correlation carrier' which could control growth processes.

The demonstration of the presence of a 'correlation carrier' in oat tip attracted the attention of many workers in this field, specially of Cholodny (1928) in Russia and Went (1928) in Utrecht. Shortly after, some important principles were established and it was concluded that all tropisms were governed by a growth hormone system, apparently, essential to all plant growth.

Intitially, thus, the main emphasis of the research workers centred round the study of the biological and physiological role of auxin, specially relating to its significance as a correlation carrier and chemical messenger. These researches had opened a remarkable vista of whole regulation of plant growth and gradually a differentiation in the researches on auxin set in. It was shown that a single agent—the auxin, tied together a large number of activities in the plant system. In a very short time, from the

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year 1928 to 1936, three auxins were isolated, characterised and identified. The quantitative relationships of these auxins to tropistic curvatures of roots and shoots were also established and, by the end of the period referred to above, half of the major functions of auxin, in growth and development, as we know them to-day, had been discovered.

The work on the chemical nature of auxins in the plant was well initiated by Kögl and Haágensmit (1930) in Holland and Thimann (1935) in the United States of America. Their researches led to the developments on two different lines. Of these, the first confined to the discovery of the activity of indoleacetic acid (abbrevated as IAA) and other related compounds by Kogl and co-workers (1934) and its extension by Zimmerman and Hitchcock (1935) of the Boyce-Thompson Institute in U. S. A. Subsequently Norman *et al* (1946) made it possible to apply these growth regulating substances as growth inhibitors and herbicides through their use in concentrations beyond what the plant tissues are normally able to tolerate. These investigations added to the practical utility of these substances.

The second line of work was directed to the bio-chemical studies of indoleacetic acid inside the plants. Haágensmit (1930) and Avery (1937) and their co-workers were able to isolate and chemically identify indoleacetic acid in plant extracts. It was interesting to study the production, source and fate of auxins in plants.

Further remarkable demonstrations of the physiological role of auxins came from the treatment of plants with the compounds of hormonal nature. Went (1934) discovered that auxins could stimulate the formation of adventitious roots. Since then, there have been many reports (cf. Thimann and Köepfli, 1935; Zimmerman and Wilcoxan, 1935 etc.) establishing the uses of auxins for stimulating rooting. The credit towards the realisation of the effectiveness of auxins in the morphological differentiation in plants must go to Skoog and Tsui (1948). It is these workers who found that relative auxin concentrations in plant tissues play a crucial role in the growth processes of plants. La Rue (1936) discovered another important role of phytohormones. He demonstrated that auxin applications were capable of retarding leaf abscission. His findings were corroborated by several other workers (Gardner and Marth, 1937; Nixon and Gardner, 1939 etc.) in this field, who found, that abcission of all plant organs, e.g., leaves, flowers, fruits etc., were correlated to the natural auxin content in the plant.

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Discoveries leading to further practical utility of these substances followed in quick succession. For instance, Gustafson (1936) suggested that plant hormones play a key role in setting parthenocarpic fruits. Immediate trials in this direction led to profitable returns in tomato and figs.

Later in the year 1942, Clark and Kerns showed that uniform flowering could be induced in the pineapples on the appropriate use of auxins. The pineapple industry in Hawaii and Puerto Rico quickly adopted the auxin sprays to achieve this end.

The herbicidal properties of the substituted phenoxyacetic acid derivatives were carefully investigated both in England and U.S.A. during the course of World War II. Realising the importance and utility of the results of these findings, several teams of research workers engaged themselves in the work, such that, the herbicidal uses of several growth regulating substances are well known to-day, inasmuch as 60,000,000 pounds of 2,4-dichlorophenoxyacetic acid (abbrevated as 2,4-D) is manufactured annually in the United States and about 50,000,000 acres of land is treated with this herbicide alone. Needless to mention, that 2,4-D is utilised as an effective weed-killer on a wide scale in U.S.A. at the present. The frontiers of research in this direction are no longer confined to the places of origin but are extending day by day to other lands, inasmuch as, that we ourselves have launched an extensive project of weed control through hormonal herbicides.

Application of phytohormones to flowers has been found to cause, on the one hand, abortion of the ovule (Swanson *et al*, 1949) while, on the other, it may effect an improvement in its fertilisation. The desired effectiveness would depend on the type of hormone used and its dosage concentration. Wester and Marth (1949) successfully attempted to utilise the beneficial effects of auxins on fertilisation in plant breeding procedures. Crane and Marks(1952) have similarly reported successful crosses in pears and apples following the use of 40 p.p.m. β—naphthoxyacetic acid brushed into the ovaries at the time of pollination and again after a lapse of 24 hours. More recently in 1954, Ricks utilised some of these growth regulating substances towards the successful breeding of tomatoes.

The development of the auxin field forms a typical example of how the science works. Not long ago, the growth of plant was considered merely a category or only a property of living organism. With the development of research in this field, however, it came to be known that growth in plants was dependent on this entity—the auxin. It was further realised that

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growth of plants could be controlled at will through suitable manipulations in auxin content. This led to the discovery of many a phytohormones—the plant regulating substances. With the introduction of these compounds of hormonal nature, ways and means of their usage have been worked out, so that, at the present day, recourse is taken to spray applications, exposure of plants to vapours, to dusting methods, to dip the cuttings in hormonal solutions or to soil treatments. Consequent to such applications, many types of effects have been indicated such as tropistic movements, promotion of cell-enlargement in shoots of higher plants, stimulation of cell-division in cambium, initiation of root development, inhibition in the development of lateral buds and callus formation. Such diverse effects are indeed very interesting.

Not long ago, it was found that application of these growth substances could induce rooting in almost every part of the plant. Thus, leaves, flowers, petals, peduncles and petioles all could produce roots under the influence of phyto-hormones. Findings of this type have given rise to practical methods of plant propogation and plant improvement. Using growth substances, it is now possible to successfully propagate plants from cuttings, inhibit bud development and prolong dormancy, influence the time of flowering, prevent pre-harvest drop in fruits, eradicate weeds, induce seedlessness in fruits and so on.

Although much has been accomplished within the years that have elapsed since the beginning of plant hormone investigations and the findings have undoubtedly a great practical bearing, the field of hormonal research is nonetheless still new and holds much for future. In a way, an ever increasing fund of knowledge about hormone activity is continually extending our understanding of tropisms and infact of the whole problem of plant growth.

The recognition of the existence and activity of auxin is, therefore, not to be regarded as panecea but simply an opening into frontiers of our knowledge and a discovery of the unknown.

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# ARTIFICIAL RAIN-MAKING

K. C. CHAKRAVORTTY

The reports of artificial rain-making by seeding of clouds which appeared in the press from time to time roused immense interest among the Indian public on account of obvious reasons. It is, therefore, worthwhile to discuss here the physical principle involved in artificial rain-making.

Before dealing with the mechanism of artificial rain-making one has to understand the natural process which is responsible for the conversion of water vapour of the atmosphere into rain drops. Although, in their origin cloud and rain are essentially the results of one and the same physical process, formation of clouds does not necessarily mean that it will ultimately result in rain. It is, therefore, necessary to explain the physical process under 2 different stages Viz. (1) condensation of water vapour into cloud and (2) conversion of cloud into rain-drops. The essential features for the condensation of water vapour into cloud are the absorption of water vapour by hygroscopic nuclei and liberation of latent heat of vaporisation. When the temperature of a moist sample of air due to dynamic cooling or any other cause falls to approach its dewpoint, the hygroscopic nuclei begin to absorb moisture from the air and condensation occurs over the large nuclei even before the saturation point is reached. As the condensed drops grow in size, the hygroscopic material becomes inactive in helping further condensation and at this stage the condensation process can proceed only with a slight amount of super-saturation. The steady state diffusion equation for the growth of drops as given by Houghton is.

$$\triangle(a^2)=8k(\rho_w-\rho_{ow})\triangle t$$

when $\triangle(a^2)$ is the increment of the square of drop diameter in the time $\triangle t$; $\rho w$ is the water vapour density at a distance from the drop and $\rho ow$ is the water vapour density in equilibrium with the drop.

The latent heat of condensation being released at the drop surface and transferred to the air by condensation, the equilibrium temperature of the drop becomes greater than the air temperature and $\rho ow$ becomes, therefore, greater than the saturation water vapour density at the temperature of the air. ($\rho w-\rho ow$) being posetive, super-saturation should exist throughout the process. As the super-satuatation required for the growth of the drop can not be maintained for any reasonable rate of ascent

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of moisture, all the drops will have a tendency to attain about the same size of limiting dimensions according to Houghton's equation. As the drop becomes larger and larger the rate of growth decreases considerably. The maximum radius of a droplet formed in this way is estimated to be $10^{-3}$ to $10^{-4}$ cm. Which is near about the radius of a droplet of fog or cloud. These droplets being thus exceedingly small, they appear to float in the sky but the rain drops which have radii varying from .01 to .25cm. can not remain floating in air. Even if we assume that the growth of a cloud droplet and that of a raindrop occur under the same condensation process, it would take about 100 seconds for a condensation nucleus to grow to an average cloud-droplet but 24 hours to grow to the size of an average rain-drop. Since actual observations do not support such a long interval of time for the growth of rain-drops, it is obvious that rain drops are not formed from condensation in the same way as cloud droplets are formed.

Now the question arises as to how to explain the latter stage in the formation of raindrops i.e. how cloud droplets are converted into raindrops. This subjects engaged the attention of many scientists for a long time and various explainations were put forward such as action of electric charges on the cloud droplets, collision due to hydro-dynamic attraction between the cloud droplets falling side by side or due to turbulence, temperature difference on the cloud droplets due to radiation, variation of vapour pressure with drop size etc. Some of these explainations were, however, not found sufficiently convincing. It was in 1933, that Berjeron postulated the well known Ice-crystal effect and he attributed the colloidal instability in a cloud consisting of a mixture of ice particles and supercooled water droplets to the formation of rain-drops. It has been observed that the water-droplets in a cloud do not necessarily freeze when the temperature falls below 0°C but they remain as super-cooled water droplets upto about —15°C. Similarly saturated water vapour surrounding the super-cooled water droplets do not condense into solid ice even when its temperature is much below 0°C. This anomaly is believed to be due to the absense of appropriate types of nuclei to initiate the action. If, however, the cloud is cooled below —15°C or so, then a few ice-crystals appear in the clouds. It is know that at temperatures below 0°C the saturation vapour pressure over ice is lower than that over super-cooled water. Hence the resultant vapour pressure of the cloud which contains both supercooled water droplets and ice particles at a particular temperature would be somewhat between the two saturation pressures at that temperature, with the result that the water droplets will rapidly evaporate and condense on the ice particles and thus the size

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of the ice particles will gradually increase at the expense of the super-cooled water droplets. The ice particles will then be heavy enough to fall under gravity through the cloud. Again during their downward passage through the cloud containing super-cooled water drops, the ice particles will become still bigger in size under the same process and will fall down under gravity.

While Berjeron's theory for the release of precipitation is considered to be the most satisfactory one and is supported by actual observations, it does not explain the formation of rain from the warm non-freezing cloud in the tropical and semi-tropical regions. The ideas put forward by Langmuir and Bowen in recent years are quite helpful in this connection. They attribute the formation of rain drops to coagulation of cloud droplets of widely different sizes. In a cloud consisting of droplets of different sizes, the larger droplets fall faster than the smaller ones with the result that they collide and coalesce. This is a cumulative process ; droplets growing bigger and bigger, fall faster and faster and accelerate the action. For such an operation clouds should have a fairly high water content. Some updraught in the clouds is also needed so that in the beginning of the process the falling drops should get enough time to coalesce with sufficient number of smaller drops to grow into swiftly falling raindrops. In a recent paper Bowen has shown that the rate of growth of a droplet of diameter D falling relatively to a cloud of other droplets is given by the formula

$dD/dt = WuE/2$ when W=cloud water content, $u$=relative velocity of droplet and E=collective efficiency.

Form what has been stated above one can understand why some clouds give profuse rain while others which appear to be quite identical in structure do not give any rain at all. Failure of rainfall from the apparently rain-giving clouds in nature may be due to the following circomstances :—

(1) Due to absence of ice crystals in the super-cooled portion of the clouds in spite of their high tops and low base Berjeron process is not operative.

(2) Due to non-exixtence of cloud drops of widely different-sizes in the clouds in spite of their large water content and requisite up-draught the coagulation process is not operative.

It is fairly clear from the foregoing discussions that it may be possible to induce artificially the formation of rain in suitable types of clouds by appropriate seeding. In a cloud of sufficient thickness with its top above the freezing level, but not high enough to attain a temperature where natural

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ice formation is possible, introduction of ice crystals in the super-cooled portion of cloud should induce artificial release of rain according to Berjeron process. Berjeron deduced that in a cloud super-cooled to $-10°C$ and containing 1000 droplets of diameter $20\mu$ per cc an ice crystal injection of 1 per cc. would cause all the liquid water to evaporate and sublime into the ice-crystals in about 20 minutes time. For this purpose solid $C0_2$ or silver Iodide is used. The solid $Co_2$ pillets whose temperature is near about $-100°C$ cause the formation of ice crystals in the clouds through which the pillets are dropped. The usefulness of silver iodide lies in its property of producing ice at a temperature not far below $0°C$ (say about $-5°C$) at which natural formation of ice crystals in saturated air does not take place. In warm clouds of sufficient thickness and appropriate water content which have their tops below the freezing level and in which updraughts are persisting for sometime, artificial rain-making should be possible by introducing large water drops (much larger that the cloud droplets) into the bases of such clouds. This may be done either by spraying water or by supplying large hygroscopic nuclei into the bases of clouds, so that coagulation process is operative in the formation of rain.

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# POULTRY-KEEPING IN INDIA

A. B. MISRA

Poultry-keeping has been the Cinderella of the agricultural department in this country. Though the people are now becoming a little more poultry minded, it cannot be said that many of them keep poultry, because, in the villages where most of the birds exist, the birds take care of themselves instead of being taken care of.

The term "Poultry" includes chickens, turkeys, ducks, geese, swans, pigeons, peafowls and ostriches. Poultry-keeping means the production and marketing of poultry (dead or alive) and of their eggs.

The original homes of the modern breeds of fowl is said to be south and central India, the Himalayan Terai, Assam, Burma, Ceylon, Java and Sumatra. There are four known species of the wild fowl which belong to the same genus "Gallus". These are (1) *Gallus gallus* or *Gallus bankiva* (the Red Jungle fowl), *Gallus lafayette* (the Ceylon Jungle fowl), *Gallus sonnerati* (the Grey Jungle fowl) and *Gallus varius* (the Javanese Jungle fowl).

All the four species can be crossed *inter se* and the hybrids are also fertile when inbred. They can also be mated successfully with the domestic stocks. It is generally agreed that all our domestic breeds of fowl have sprung from these four wild species. Several experts maintain that the Red Jungle fowl provided the main part of the foundation blood of the modern breeds.

Like the mallard duck and the rock dove, the jungle fowl is especially susceptible to domestication, and, at the dawn of early civilizations, which sprung in China and in India, domestication and fanciful breeding began even before the origin of hieroglyphics or the written word. Tradition has it that domestication of the cock was carried on in China even as early as 1400 B.C.

In India we have to rely upon literary evidence of the early occurrence of the cock. In the Indus period of the Aryan civilisation, the time of the Rig Veda, there is no mention of the cock, but, in circa 1000 B.C., when the Aryans had reached the Ganges the cock was known to them because it is mentioned in the Atharva and Yajur Vedas.

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The sport of cock-fighting has had a tremendous influence not only upon the domestication but also upon the subsequent distribution of the fowls in many lands. The literature of many nations is replete with references to this sport, and it would appear that cock-fighting has had as much to do with the domestication of the fowl as the demand for its meat. Later, in order to satisfy their own aesthetic sense of beauty, breeders evolved many other new breeds for the sake of their plumage. In recent years breeders have evolved numerous utility breeds also.

To-day the fowl occurs in almost all parts of the habitable earth and more people are concerned with the fortunes of this industry than any other class of animal. Further, in industrialized countries, poultry keeping has become a very highly specialized occupation and the total value of the poultry products produced throughout the world runs into several figures. In America alone, the annual value of poultry products consumed is estimated at $ 1,000,000,000.

In India, however, poultry-keeping has been sadly neglected though now there appears to be a general awakening in regard to the necessity of improving the poultry industry.

The fowls in India are divisible into two groups, viz., the *desi* and the improved types. The term *desi* is applied to all the indigenous fowls including the *Aseels* and Chittagongs. The majority of the *desi* fowls, however, do not constitute a well-defined breed since they have no fixed characteristics and do no breed true. The *desi* fowl, however, is a relatively small, hardy birds with no fixed colour scheme.

The *Aseel* has been bred pure for centuries by the lovers of cock-fighting. At one time cock-fighting was considered to be the sport of sports and may a man suffered reversal of fortune on the results of cock-fights.

The Chittagong is the only other Indian breed which deserves a special mention. It is mostly found in the eastern parts of Bengal and is considered to be exceptionally hardy and a fairly good producer of rather small eggs.

The term *improved* is generally applied to pure-bred fowls, (White Leghorn, Rhode Island Reds etc.) which have either been imported or bred from imported stock. The total number of such fowls is relatively small as compared to the *desi* birds.

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## Poultry Population

The first published figures of the poultry population of India are contained in a Report on the Marketing of Eggs in India and Burma (1938). These figures cannot be regarded as very accurate for most of the data have been arrived at by estimates and not by an actual census. In 1940 a fowl census was carried out along with the cattle census, but the report has not yet seen the light of the day. The figures given below have been taken from the Marketing Report referred to above:

*Number of laying hens and the total population of fowls*

| | Total No. of fowls (in Lakhs) | Laying hens (in Lakhs) | Percentage of layers | Percentage of layers to world's total population of layers |
|---|---|---|---|---|
| World | 16,510 | 10,797 | 65.4 | 100 |
| India | 1,732 | 522 | 30 | 4.9 |

Compared to other countries, India has a very high proportion of non-laying birds. Though India's laying population of 522 lakhs seems at first sight rather impressive, it is actually very low when compared to its human population. In India, the average number of fowls per 100 heads of the population is 13, whereas for the rest of the world the corresponding figure is 38. On the other hand, Denmark has three hundred birds per 100 heads of its population. Of the total of 522 lakhs of laying fowls, only 73 lakhs are of the improved type.

Fowls are kept throughout the whole country, but their numbers are low in the Madhya Pradesh, Madhya Bharat, Bihar, Orissa, Assam, Punjab and Sind. The densest populations is found in Kerala followed in order by the N.W.F. Province, Madras, Bengal and Bombay.

## Ducks

Ducks are semi-aquatic in their habits and, therefore, they thrive very well in regions of heavy rainfall where they can have easy access to marshy conditions of life. The drier areas of India such as Baluchistan, Rajputana, Central India, Sind, Cutch and Kathiawar have no ducks. As a general rule, ducks are found round the coast, being most abundant in Cochin, Travancore, Madras and the deltaic areas of Bengal. The total number of ducks in the whole country is estimated at 166 lakhs which is approximately 18 per cent of the world's total.

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### Other Poultry

The estimated numbers of laying geese, turkeys and guinea fowls are 1.6 lakhs, 0.1 lakh and 4.2 lakhs respectively. The majority of the geese are kept in Bengal and Orissa, whilst about 88 per cent of the guinea fowls are maintained in the United Provinces. The low figure of the turkey population is mainly due to the fact that turkeys are difficult to rear and require extra good nutrition and skilful management during the early stages of their lives. Guinea fowls are easily reared, but, as there is little demand for their eggs, they are mainly used as table birds. The geese flourish wherever a plentiful supply of succulent grass is available.

### Egg Production

There are no authentic or reliable figures of the average egg production per bird for the country as a whole. The only published figures for the whole country are those given in the Egg Marketing Report, and little reliance can be placed on its accuracy for the reason stated above. According to the figures given in the above mentioned Report the average annual productions of eggs per bird are 53 (desi) and 103 (imported) respectively. The corresponding figure for ducks is 90. Actual experience, however, shows that these data are faulty due to over-estimation.

Compared to the western standard of production of 100-120 eggs per bird in 365 days, the average egg production in India is very low and even the average size of the egg is very small. The size of the egg varies in different districts according to the breed of the fowls reared. Improved breeds lay eggs weighing about two ounces in weight, whereas the weight of the *desi* eggs ranges from about one ounce in Bengal to about an ounce and half ounce in U. P.

### Egg Consumption

Compared to Canada's annual consumption of over 300 eggs per head of the population, the consumption of 8 eggs per head in India is significant. The low consumption of eggs in India is due to religious prejudice, low purchasing power of the people, shortage in supply and the ignorance of the public in regard to the value of eggs in human diet.

The necessity of increasing the consumption of eggs cannot be overemphasised for the inclusion of eggs in the diet of the vegetarians will make the diet fairly well-balanced and nutritious. The orthodox section of the public can perhaps be pursuaded to consume infertile eggs which can be produced by keeping the males and the females separate.



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According to all the accepted standards of nutrition the major part of the population in India is very much undernourished. This is especially true of all the rice consuming areas where rice represents 75-80 per cent of the total food grains. As most of the cereals and rice are deficient in protein contents, the deficiency of the rice diet can be supplemented by the inclusion of animal food.

Everyone knows that milk is an ideal food and that diets including a liberal quantity of milk are fairly very well-balanced. However, it is not generally known that the proteins in the eggs are even better than those contained in the milk. Furthermore, eggs are richer than milk in vitamin A which is usually very much below the optimum in the diet of the rural people.

Experiments have been made in Izatnagar on rats to test the value of eggs as supplements to the villager's diet. It has been shown that the Bengali rice diet gives very poor growth results and that swellings of the sub-maxillary glands and other typical vitamin A deficiency symptoms appear in these animals. The addition of a liberal amount of eggs to their diet has had a marked effect on the growth and general health of the animals under experimentation, but the maximum benefit did not result until the diet was further enriched by the addition of calcium.

As eggs are expensive, attempts have been made to find cheaper proteinous supplements. It has been found that the nutritive requirements of a child of 6 to 9 years can be met by the ordinary rice diet plus a daily supplement of one egg and 66 gms. of soya beans. Such a diet need not be supplemented with calcium.

Other experiments have shown that *dal* plus calcium gives decidedly better results than soya bean ; but without calcium, it yields poor results.

In the present economic condition of the country, it is more rational to recommend greater consumption of eggs than of milk, for under the village conditions fowls can be kept practically without cost, whilst it is not possible for many a villager to keep a cow in order to obtain milk for the family. Moreover it has been repeatedly pointed out by a number of nutritional experts that India cannot grow, at present, sufficient fodder for its existing cattle population. Thus any compaign designed to increase the consumption of milk by the population must take note of the shortage of fodder. On the contrary, the cost of keeping a few fowls is negligible and should be within the means of the ordinary householder.

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DIFFICULTIES CONFRONTING EXPANSION

The present methods of keeping fowls is far from being productive of good results. Due to ignorance on the part of the villagers, the birds are kept under the most neglected conditions of housing, feeding and management. The present system of housing is to shut up the birds in a very small mud hut at night and to close the opening with a shutter of split bamboo or straw. As these houses do not provide sufficient air space and as they are seldom, if ever, cleaned, it is idle to expect good yields from birds so badly kept. Such houses usually become infected with ticks and fleas which cause much annoyance and damage to the birds.

The present system or lack of system in feeding is bound to yield poor results. Compared to other domesticated animals, chickens grow remarkably fast, and, therefore, need a diet richer in proteins, minerals and vitamins. In the villages, the young chickens receive a certain quantity of grains during the early stages of growth, but soon have to forage for the food by themselves. The loss sustained in rearing chicken, under such a condition, is very high. Although published figures in regard to the mortality of the chicken from a day-old to the mature state are not available, the total loss cannot be less than 50 per cent of the birds raised. Under good environal conditions, the loss ahould be only about 10 per cent. The high loss sustained in the villages must to a great extent be due to faulty nutrition because, under experimental conditions, chickens suffer from high mortality if reared exclusively on a cereal diet. Faulty nutrition also results in the retardation of growth and of sexual maturity, and consequent lowering of the efficiency of food utilization.

During the last few years a number of experiments on different protein supplements for chickens have been tried in Izatnagar. Good results with separated milk were obtained even though the total protein content did not exceed 14 per cent. Most of the American workers, however, believe that maximum growth results only from ration containing 18 to 20 per cent of protein in it. Indian birds do not require as much protein as the American birds in their diet. It may, therefore, be concluded that (1) the requirement of protein is decreased when the chickens are fed liberally on milk, (2) the optimum level of protein in a ration depends on the combination of cereals used, and that (3), on grounds of economy, it may not be practical to administer very high protein levels in the ration when good results can be had from a moderate quantum of protein.

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It is unnecessary to feed the fowls and especially young chickens on milk as they are unable to make full use of the fat contained in it. Separated milk gives equally good results at less cost. Butter-milk also gives as good results as separated milk.

From 0 to 8 weeks the most suitable diet would be cereals and their by-products together with greens, calcium and separated milk. From 8 weeks onward, lesser quantity of milk should be included in the diet. Henceforward the bird should have a free choice of separated milk and water in separate containers.

Since milk is often difficult to obtain and expensive also, experiments have been made to test the value of vegetable proteins as supplements in the ration of chickens. Soyabean meal and salt, when used instead of milk, influenced the growth of the chickens better than cereals alone. The addition of vegetable proteins without salt to the ration is of no consequence or value to the birds.

The growth promoting values of ground soyabean meal, soyabean extract and soya bean meal extracted by heat have been tested and compared. Contrary to the claims of certain American workers no perceptible difference could be detected in the growth of pullets fed on these three variants. Furthermore it has been experimentally found that groundnut meal can be used in the chicken rations with equal advantage.

More recently attempts have been made to utilize meat offals as protein supplement in the diet of poultry. Since meat offals can be had at a very low cost, poultry farmers would do well to use this in maintaining their poultry. Though meat and bone meal are used fairly extensively in other countries and, to a certain extent in England also, numerous experimenters have shown that milk gives better growth results than these concentrates. Rations which are good for the chickens are also good for the laying birds.

The major problem confronting the establishment of a stable poultry industry in this country is that of the diseases. We have no accurate knowledge of the total annual loss sustained by the Indian poultry from infectious diseases, but it stands to reason that it must be enormous, since whole areas become almost decimated of poultry in certain years.

The major diseases of poultry in India are the Ranikhet disease, tick fever, fowl pox and fowl cholera. Ranikhet disease, or more properly

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speaking the 'Newcastle disease,' was first diagnosed in India at Ranikhet in the Kumaon hills in 1927. The disease quickly spread throughout the country and in some years whole districts are deprived of their poultry stocks. So far no medicinal treatment or effective check has been found out and the losses during an epidemic are very great. Occasionally an odd bird may recover completely and become immune to it for life. The Izatnagar Institute has no doubt succeeded in producing a preventive vaccine, but it has not yet been standardised.

Spirochaetosis or tick fever, which is mainly transmitted by the common fowl tick, *Argas persicus*, is extremely common throughout the whole country excepting the southern part of Madras, Cochin and Travancore. The mortality is very high ranging from 60 per cent in chronic to 90 per cent in acute cases. Provided the outbreak is diagnosed sufficiently early, mortality can be kept at a very low level by injecting infected birds with a drug like 'Soamin.' Birds recovering from tick fever become immune to it for life.

One of the difficulties in combating the attack of ticks is the lack of good housing conditions for the birds. In the ordinary mud huts, it is almost impossible to kill all the ticks which infect the birds during the early stages of life. The adult ticks attack the fowl at night in order to suck blood. As ticks can survive for five years without food, keeping the infected houses free from them is not an easy proposition.

Fowl pox is a very infectious disease which usually attacks the birds either on the comb or on the head. Outbreaks vary in the degree of virulence, chickens being more susceptible to it than old birds.

Though treatment of the affected parts may help to reduce mortality, the best method of combating this disease is to vaccinate the birds with fowl pox vaccine. As the vaccination renders the birds immune for at least six months, and, as the cost per bird is very small, all poultry keepers would do well to vaccinate their birds as a routine method at least once a year.

Fowl cholera is a highly fatal and infectious disease which does considerable damage to poultry. It has recently been suggested that there may be some carriers of the causative organism (*Pasteurella aircida*) which under ordinary circumstances is non-pathogenic, but which, for reasons not well understood, may acquire virulence. In a general outbreak of this epidemic, administration of sera from recovered birds has given good results and vaccines also confer a certain degree of protection against it.

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In the farms and in the fields, considerable difficulty is experienced in differentiating between Ranikhet disease, fowl cholera and tick fever. Clinically all the three diseases are somewhat similar and it is unwise to depend upon clinical evidence alone. As the lesions disclosed in a postmortem examination are also very much alike, accurate diagnoses can only be made by biological tests and microscopical examination.

The spread of the various diseases is aggravated by the absence of any legislation on this account. At present owners of birds in villages on suspecting an epidemic in their flock immediatly bring them into the bazaar to dispose them of for whatever price they can fetch. This leads to the spread of the diseases far and wide.

Those wishing to keep birds should, in the first instance, build their farms far away from other poultry farms. Again, it is better to build the farm away from a public road or a thoroughfare. New stock, if and when purchased, should be obtained from a clean farm. All new birds should be quarantined for about 14 days prior to mixing with the old stock. The safest way of introducing new blood in the stock is to purchase eggs that are ready to hatch.

Early diagnosis of a disease is of prime importance. The owner of birds should, therefore, possess a keen eye for detecting the symptoms. If an outbreak of an infectious disease is suspected, it is best to kill a few birds in the beginning than to let the whole flock succumb to it.

## Marketing

The present position in regard to marketing is far from being satisfactory for the fowler generally gets a poor return for his labours and the public is never sure of the quality of the eggs purchased for consumption. Most of the eggs are collected from the villages by the middlemen who buy them at rock bottom price. As the eggs usually pass through several hands before reaching the consumers, and, as the channels of communication are rather slow, it is only natural that the eggs are far from being fresh when they reach the consumers. From this one may infer that few of the city dwellers have the good fortune to enjoy the taste of a really fresh egg. Most eggs are of good quality when laid but tend to deteriorate soon afterwards and continues to do so until they become unfit for human consumption. When newly laid, the egg has a clean sound shell which protects its internal contents and the central yolk and the surrounding white (or albumen) fills its interior. Two shell membranes separate the white from

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the shell which is covered on its outside with a protective substance called "the bloom of the shell". As soon as the egg begins to cool after being laid by a hen, a small air chamber appears between the outer and inner shell membranes at the broad end of the egg. The size of this air chamber steadily increases as the egg grows older.

When the contents of a fresh egg are poured out on a flat surface, say in a petri dish, the yolk stands up well in the middle of a fairly dense layer of white. As the egg deteriorates in quality, the height of the yolk decreases and it tends to flatten out. At the same time, the white breaks down or liquifies and tends to spread out over a wider area. It is, therefore, possible to determine the quality of an egg by this means. In fresh eggs, the amount of thick white can be measured by placing the whole of the albumen on a sieve with 80-100 squares per square inch of it. On doing so, the thick white will stay on the top of the sieve but the thin white will drain through. A good quality egg contains 50 to 60 per cent of thick white but an old egg may have no thick white in it, i.e., all its white may have become thinned or liquified.

A crude method of estimating the quality of an egg is the flotation test in which better quality eggs sink to the bottom of the container, whereas the poor ones float in water. This test is, however, very crude in that it is only possible to differentiate between eggs of very poor quality and those which are not nearly so.

The only really satisfactory method of testing eggs-in-shell is by means of candling. The candling lamp is so designed that most of the light from a 40 to 60 watt bulb is directed through a small hole approximately an inch in diameter. The egg for examination is held in front of this hole and twirled rapidly in order to rotate its internal contents. A good egg shows a small air space and a dimly visible yolk placed centrally. In a stale egg the air space is large and the yolk becomes pronounced and sunken on one-side.

Certain eggs when freshly laid are defective on account of the presence of blood spots and meat spots due to the rupture of blood vessels or the tearing of the ovarian or oviducal tissue. As these defects are unsightly, such eggs should not be offered for their sale to the public. Cracked eggs deteriorate in quality faster than sound eggs and become unfit for human consumption. They should, therefore, not be included in the trade in bulk.

The rate of deterioration of the egg depends on the storage conditions. By the candling method, we can only find out its internal quality and

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not its age. Eggs deteriorate very rapidly in quality if kept for some time at a high temperature (80°-120°F) but suffer a change very slowly if kept at a low temperature (29°-31°F). Too low a temperature is also dangerous since the internal contents solidify. In a very dry atmosphere, eggs lose moisture quickly and develop large air cells. In a very humid atmosphere, the enlargement of the air cell is retarted but moulds appear on the surface of the shell and even inside it. The keeping quality of the albumen is materially improved by storing the eggs in an atmosphere containing about 5 per cent of $CO_2$.

Under commercial conditions, eggs can be held for 6 to 12 months or even longer in cold storage at a temperature of 29° to 31°F. with a relative humidity of 85 per cent, a free circulation of air being of course maintained. In more commercialised countries, where egg marketing has become the means of subsistence of a large section of the people, eggs are put into cold storage when they are cheaply and abundantly available and taken out for sale when there is rise in their price.

A number of indigenous methods of storing eggs for short periods are in vogue in India. Storing eggs in lime water is beneficial both in the hot and the cold seasons of the year. Varnishing or treating the shells with hot heavy mineral oils is also useful in lengthening the life of the eggs.

### Prospects for expansion

The poultry industry in India is, at present, in a very backward condition and there is much room for expansive production in order to improve the general health and physique of the people. It is necessary that education in the upper primary or the middle schools in the rural areas be given a practical or vocational bias.

A great expansion of the poultry industry can take place at a nominal cost and without affecting the food supply of the population as the birds would support themselves on what normally goes to waste in the house of a farmer, only if a certain number of them would take seriously to poultrying. Under the present conditions, a farmer does not, as a rule, keep more than 5 to 10 birds. Though he does not make much profit from the sale of the eggs or the birds, yet it is significant to note that all the receipts are clear profits to him because the birds mostly forage for themselves.

Concurrently with increased production, improvements in our present system and methods of marketing will become necessary. The Marketing Branch of the Government of India undertook the marketing

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of eggs some years ago. The eggs have now to pass through Grading Stations where they are graded according to size. Uptil now the Marketing Authorities have been busy in opening new Grading Stations instead of attending to the quality of the eggs sent out from these stations. The personnel employed at the Grading Stations is illiterate and consequently not dependable. In other countries graders are required to undergo a rigorous course of training and Grading Stations are apt to lose their licence if their products do not conform to the required specifications. So far our egg-graders have not been trained for the job that they do, and, consequently, the eggs marketed under the 'Agmark' seal are not yet satisfactory in quality.

Another defect in our present organization (Agmark) is that the producer is not rewarded for the labour of producing bigger, cleaner or better quality eggs.

The best way of improving the marketing of eggs in the suburban or rural areas will be by establishing Co-operative Societies, which will pay the producer fair price according to the quality of the eggs produced. This process would ensure quick and regular marketing also, and the greater part of the profits made in the transaction would go to the producers.

It is difficult to control the development of embryo at high temperatures. In the months of May and June, fertile eggs become inedible in 2 to 3 days, if kept at the ordinary room temperature; whilst infertile eggs keep longer. A practical solution will be to segregate the males from the females during the hotter months of the year. This would result in a marked improvement in the quality of the eggs and would not require any special attention for no hatching would occur in such eggs. However, this simple and practical solution of one our major difficulties is not likely to be acceptable to the villagers who firmly believe that the presence of the male birds is indispensably required for egg-production.

It has been found that the eggs can be defertilized by holding fertile eggs in water at 140°F for 45 minutes. Fertile eggs after this treatment keep as well as the infertile ones. The temperature of the water needs to be carefully controlled for too high a temperature will result in the coagulation of the internal contents of the egg.

So far little has been done in regard to the control of diseases of the poultry in the villages. During the last few years, special investigation officers have been appointed in all the States for checking the poultry diseases and finding out remedies for them. These officers are selected



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from amongst promising veterinary graduates who receives a special course of instruction in poultry diseases and management for four months at Izatnagar. In addition to these field workers, the Imperial Council of Agricultural Research have made an alloment of funds for the appointment of two special officers for investigating the poultry diseases, one at Izatnagar and the other at Bangalore.

All the Indian States are now pursuing a poultry improvement policy which comes under the administrative jurisdiction of the Director of Veterinary Services or the Director of Agriculture. Most of these own demonstrational poultry farm and every year hatching eggs and birds of improved varieties are distributed at nominal price to the villagers interested in raising stocks of them.

Opinions differ in regard to the precise manner in which improvement in the livestock is to be effected. The importation of improved breeds and utilisation of them for pure breeding, or for grading up the indigenous stock, finds favour with some; whereas the improvement of the *desi* birds by selective breeding is strongly advocated by others. The supporters of the former school of thought maintain that the *desi* fowl is of little value and that the only practical method of effecting improvement is by cross breeding them with the improved breeds. Others believe that *desi* birds are hardier than the improved varieties and also less susceptible to diseases. Perhaps as a first step towards improvement, it may be advisable to employ both of these methods until there is sufficient scope created for selective and restricted breeding of the indigenous stock.

It is important to ascertain the relative merits of the different breeds and crosses. Genetical work is generally slow in yielding results and biometrical data are the only other means of computing the results. It has been noticed that differences of strain are often more important than breed differences. As our efforts in regard to egg production, mortality etc. will keep improving, we will be able to breed acclimatised improved breeds which will give better results than those at present found in the country. The average annual egg production by *desi* birds at Izatnagar is 136 eggs, showing that the poor yield in the suburban and rural areas is more a matter of housing, feeding and management than of Genetics.

So far little sign of hybrid vigour has been noticed, in the intercrosses no matter which way the cross was made. The $F_1$ progeny have yielded eggs approximating to the mean of the productivity of the

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parents. Egg size in the $F_1$ generation has also approximated to the mean of that of the parents.

The main criticism of the work done on the experimental farms is that the birds are kept under too good conditions which will seldom be available to them in the villages. In order to test the results in a normal type of rural environment, 24 weeks old pullets of each breed and of the various crosses should be distributed to the villagers and information in regard to their health, mortality and egg production obtained from them and statistically recorded. Attempts should also be made to find out practical and cheap methods of improving the methods of housing, feeding and managing poultry.

## Exports

So far India has not attempted to take a major part in the export trade of eggs. Some eggs were being exported to Burma and Ceylon but for the present, at least, the Burma trade is out of question and Ceylon has levied tariff duty on imported eggs. Against this we ought to remember that in normal times eggs are imported into India from abroad in order to meet the requirements of some of the principal towns.

Looking to the future, however, it is possible that India may also compete for some of the important egg and poultry markets of Europe. The three main products for which there is a maket are eggs in shell, frozen eggs and dried eggs. There is not much prospect, in the near future, for India sharing in the egg-in-shell market as the size of the Indian eggs is much too small for the better class markets. The trade in frozen eggs was until very recently entirely in the hands of the Chinese.

Dried eggs are now superceding frozen eggs. The chief advantage of dried eggs is that they are less bulky, more concentrated and keep well for a number of years at ordinary room temperature. The last war and the shortage of shipping gave the dried egg industry a great fillip.

There is also a big import of poultry meat into countries such as England. Attempts have recently been made to cann poultry meat for the army. Chickens can be canned very cheaply in India than in the European countries and a flourishing industry is possible.

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# SOME USEFUL ASPECTS OF THE FUNGI

R. P. MISHRA

Fungi are no longer regarded as being harmful agents only, concerned in the work of destruction. Recent studies of these micro-organisms have revealed that they posses power both for good and evil, and, if properly harnessed, can be of immense value in human affairs. No doubt they will continue to constitute a potential source of danger as disease producing agents, but if suitably employed, can be harnessed to a certain extent for the benefit of mankind also. Obviously a good knowledge of the fungi has become essential at the present time.

Green plants are able to synthesize their own food by means of the chlorophyll contained in the leaves. Fungi are lower Thallophytes which lack this green pigment and are, therfore, unable to manufacture their own food and have to depend for it on external sources. Fungi obtain their food in diverse ways from different sources and are accordingly called parasites or saprophytes. The saprophytes obtain their food from organic matter, whereas the parasites attack living plants and animals for their sustenance. There are, however, intermediate forms between them.

Soil is now regarded as a living complex in which a very close relationship between the mineral constituents, the organic matter and the micro-biological population obtains. Fungi constitute a major part of the micro-flora of the soil, other components being bacteria, actinomycetes, protozoa, algae and other plant and animals. Fungi are important agents concerned in the decomposition of organic matter. After death, the plant and animal remains return back to the soil as organic matter. All saprophytic fungi attack and decompose organic matter and convert them to simpler substances that once again becomes available for utilization by the green plants. Organic substances like fats, proteins and carbohydrates are broken down into water, carbon dioxide, acids and alcohols. These changes are brought about by the action of powerful enzymes secreted by the fungi which, by their activities, continuously supply carbon dioxide to the air which is used up by the higher plants. A few of the fungi like *Trichoderma*, *Penicillium*, attack cellulose and lignins and convert them into simpler substances. Hence they serve as useful agents in maintaining the different cycles in nature. Some of the most common fungi found in the soil are *Aspergillus*, (Fig. 4) *Alternaria*, *Cladosporium*, *Fusarium*, *Mucor*, *Rhizopus* (Fig. 6) and *Trichoderma*.

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Supply of adequate food is probably the most important problem confornting us today. Suitable food supplements are desirable to our diet. Many species of fungi are used as food by the poor and the middle classes of the people. In some parts of India, fungi, popularly known as "mushrooms," are regularly used in culinary preparations and are considered to be a delicacy. Mushrooms belonging to the class Basidiomycetes are very common during the rainy season. Many of them are edible, but some of them are poisonous also. The edible fungi are sometimes cultivated and sold in the market. Species of *Agaricus*, *Cantharallus*, *Coprinus*, *Lepiota*, *Marasomin*, *Trichoderma*, *Lycopordon*, *Boletus* belonging to Basidiomycetes and species of *Morchella*, (Fig. 1) *Truffles*, *Terfezia* belonging to Ascomycetes are edible.

To compensate for the heavy losses caused by the fungal parasites of plants, there are a number of industrial processes in which the biochemical activity of the fungi is utilized to advantage. Even at this stage, Industrial microbiology is in an infant stage of development, and, as more and more knowledge accumulates regarding the physiology of the fungi, their utility and importance will become further enhanced. The fungi contain within their cells powerful organic catalysts known as enzymes which can acclerate chemical reactions and bring about specific changes in different fermentation processes. The enzyme systems of the fungi are very complex and mostly specific in character. One of the most important fermentation process in which the enzymic activity of the fungi is made use of is the manufacture of ethyl alcohol by the fermentation of sugars with yeasts. Plant products rich in sugar, starch or cellulose material can be used in this process. Raw material such as sugarcane, maize molasses, rice, wheat, barley, jowar, bajra, potatoes, sweet potatoes, fruit juices and other similar substances can be utilized for producing alcohol. But the raw material must first be converted into sugars before they can be acted upon by the yeast. The yeast most commonly employed is *Saccharomyces cereviçeae*, (Fig. 2) a member of the Ascomycetes.

Brewing or the production of malt beverages such as beer, ale and porter is also an important industry. The process consists of prepared infusions from sprouted grains subjected to a process of fermentation by *Saccharomyces cereviceae*. The important steps in the manufacture of beer are the preparation of the malt, mashing of the malt, boiling the mash and, lastly, the fermentation. After the fermentation is complete, the carbohydrates of the medium are converted to carbon dioxide and alcohol. Here

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also strains of *S. cereviceae* (Fig. 2) are employed. A pure culture of the desired yeast is used as a starter. Besides using the fungi in the production of alcohol and of malt bevearages, they are also employed in the manufacture of wine, rum, whisky, brandy and other liquors. *S. ellipsoides* is used in the manufacture of wine, *S. cereviceae* (Fig. 2) and *Schizosaccharomyces* in the manufacture of rum, whisky, brandy and gin.

The baking of bread was known to the Romans, Egyptians, and the Jewish people for ages past. In this process the carbon dioxide evolved after fermentation is utilized to swell up the dough and thus make the bread light. Baker's yeast is used as the starter.

Lipoids and fats are synthesized to some extent by fungi commonly known as moulds and also by one or two species of yeasts. *Oospora lactis, Penicillium javanicum* (Fig. 3) and *Aspergillus niger* (Fig. 4) possess this capacity. The nature of the lipoids produced varies with the type of mould used. Pasteur, while studying the fermentation process of wines and beer, noticed that 2.5 to 3.6% of Glycerol was regularly formed in the fermentation of sugar. From this ultimately developed the "Sulphite Process" in which glycerol is manufactured by a fermentation method employing yeast as the agents. Different strains of the yeast *S. ellipsoides* are commonly used. Yeasts are trained to grow in alkaline medium before being inoculated as starters in the main mash. Glycerol is used as a solvent, sweetening agent and as a constituent of ointments, lotions and adhesives.

Cheese is not generally used as food in our country but in the U.S.A. and in U.K. it is a very important supplement to the daily diet. Blue cheese, Cambert cheese, Roquefort cheese, Gorgonzola and Stilton cheese are produced by moulds, while Cheddar cheese is principally ripened by bacteria such as *Streptococcus lactis* and *Lactobacillus caseai*. The Roquefort and Cambert Cheeses are ripened by different species of *Penicillium* (Fig. 3). During the process of ripening the spores of the fungus are introduced into the cheese as starters under controlled conditions of humidity and temperature. After the completion of the fermentation the cheese of the desired aroma and flavour results.

Commercial production of citric and oxalic acids by mould fermentation process is a landmark in the history of industrial microbiology. The commercial production of citric acid by this means is a flourishing industry. The gradual replacement of the older method of producing citric acid from citrus fruits by the new method has revolutionized the industry. Mycological citric acid was first produced in Germany and this method spread

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rapidly to other countries so that in a very short time U.S.A. was in a position to export large quantities of it overseas. England, U.S.S.R., Belgium and Czekoslovakia now produce large quantities of citric acid by this method. Recent researches have indicated that molasses, the major by-product of sugar industry, which go to waste can be successfully utilized for producing these acids. Citric acid is an important chemical of commerce and is used in the manufacture of citrates used in the preparation of effervescent salines and beverages, flavouring essences used in confectionary and as a mordant in dyeing and calico printing.

Solutions containing Sucrose are inoculated with spores of *Aspergillus niger* (Fig. 4) and allowed to stand for 7 to 10 days. Fermentation of the medium sets in and an enzymal oxidation of carbohydrates gradually takes place, finally liberating citric acid as the ultimate product. Besides *Aspergillus* a few species of *Rhizopus* (Fig. 6) and *Mucor* have also yielded good results. Gluconic, Fumaric, Pyruvic, Gallic, Itaconic, Itatartaric, Kojic and Lactic acids are produced in large amounts in fermentation by moulds. Several fungi, notably the Moulds, also produce Mannitol as a fermentation product.

Preparations of mould enzymes are used as food by convalescing persons. Commercial amylase is produced from the bran of wheat and rice by a fermentation process. Amylase is used in the preparation of adhesives, in textile industry and in pharmaceutical trade. Many other enzymes such as invertase, protease and pectinase are also produced by moulds. Invertase is used in confectionary for making soft centres in the candies. Protease, produced by *Aspergillus flavus* is used in de-gumming of silk goods, in un-hairing and bating of hides, in the preparation of glue and as an agent for ripening cheese. Pectinase, produced by certain species of Penicillium, is used in clarifying fruit juices. "Koji," a Japanese name used for the starter, is used in the preparation of alcoholic drinks. It is prepared from cheap raw materials like the bran of rice and wheat. The meal is sterlized, allowed to cool and is then inoculated with spores of *A. flavus-oryzae* group. The inoculated material is incubated at the desired temperature to favour the growth of the mould. The material is then dried and kept for further use.

Some of the cultivated yeasts are used for human consumption. Food yeast is extremely rich in Vitamin B and different kinds of proteins. To supplement our diet, which is usually deficient in these consitituents, the physicians prescribe food yeasts. Manufacture of food yeast on an industrial

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scale is being done in Germany and the fungus commonly employed for this purpose is a strain of *Torulopsis* but other fungi like *Torula, Monilia, Candida* (Fig. 7), and *Oidium* have also been used.

The importance of Antibiotics in the present day therapeutics can not be overemphasised conidering the tremendous use of drugs like Penicillin and Streptomycin. Alexander Flemming, a prominent biologist, discovered in 1929, a phenomenon the knowledge and application of which have saved millions of lives from suffering. It can be summarized that, under certain conditions, fungi produce substances that are capable of inhibiting or even destroying other micro-organisms. The substances secreted by them possessing such anti-bacterial properties are called "Antibiotics". Antibiotics are produced by bacteria, fungi and actinomycetes. Probably the greatest discovery of the century is the isolation of the antibiotic Penicillin from the mould *Penicillium.* The most important sources of antibiotics are species of *Penicillium, Aspergillus, Actinomycetes* (Fig. 8) and a few types of higher fungi. "Penicillin" and "Streptomycin" the two important antibiotics of our time are produced by species of *Penicillium* and *Streptomyces* respectively. With all our achievements, even now we are only in the preliminary stage of research and investigation on Antibiotics. Probably there still remain antibiotics of considerable promise unknown to us that may be more potent than Penicillin or Streptomycin, and it will not be surprising if Penicillin is replaced in future by a better product. The Government of India have established "The Hindusthan Antibiotics" at Pimpri, Poona, where a large scale production of Penicillin is being made. Penicillin has the unique property in that it is non-toxic to the leucocytes but stops the growth of Gram positive bacteria even in the presence of the body fluid.

It is not possible to give here details of the process of its production, but it can be said that this also is a fermentation process in which the mould is grown in shallow layers of the production medium in flasks, drums or deep tanks. At the end of the fermentation, the Penicillin is recovered as a salt. The moulds used belong to the *Penicillium notatum-chrysogenum* group. Besides Penicillin about eighty other antibiotics produced by the fungi have been discovered, but their use in medicine is still limited because most of them are still being purified, tested and assayed.

"Ergot", the sclerotial bodies of *Claviceps purpurea* (Fig. 5) produced in place of the Rye grains, is an important source of medicine. In many countries including India, there are at present schemes on hand aiming at the artificial production of ergots of wheat and rye by inoculating their

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ovaries with spores of the fungus. Many important pigments such as Helminthosporin, Catenarin, Cyanadontin, Aeuroglobin and Boleton are also of fungal origin.

In the present state of our knowledge of the fungi, it is difficult to predict their potentiality for the good of mankind. The physiology of fungi is as yet imperfectly understood, but, with the acquisition of more and more knowledge, it would be possible to gain an insight into its secrets and to utilize the knowledge so gained for human betterment.
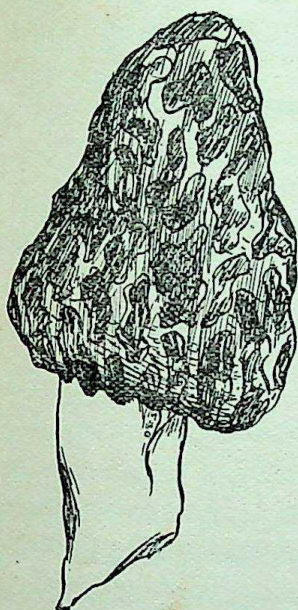
Fig. 1—Morchella
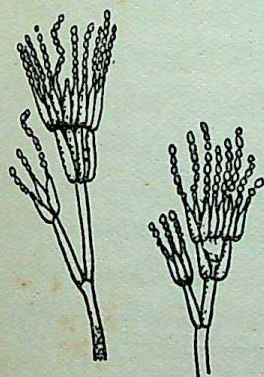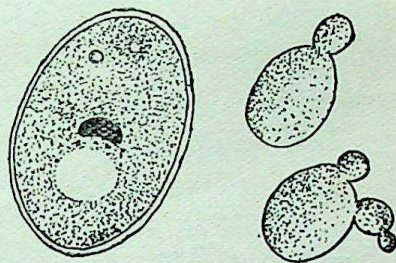
Fig 2—Saccharomyces Cereviceae

Fig. 3—Penicillium
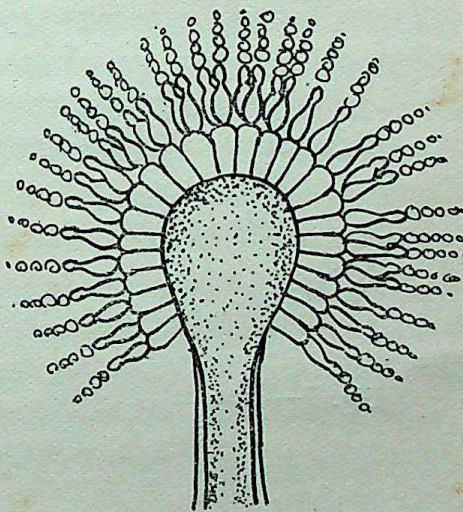
Fig. 4—Earhead of Aspergillus



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Fig. 5—Ergot of Rye
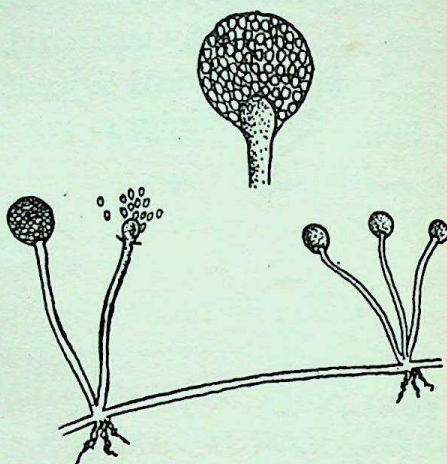
Fig. 6—Rhizopus
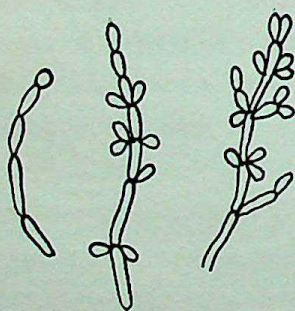
Fig. 7—Candida

Fig. 8—Actinomycetes

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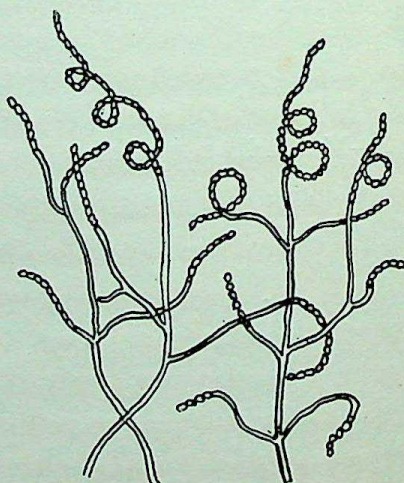
# TOURISM IN INDIA

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AND

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Tourist is a person who travels for pleasure, recreation or culture visiting a number of places for the objects of interest, scenery or the like. The number of such persons is growing from year to year. Temporary human migrations take place on a large scale. 'Tourist invasions' have become a part of our civilization. Tourism is closely related to the prevailing conception of travel. In Europe during the 18th century travellers went to quiet and temperate places ; during the 19th century a taste of 'horror's of nature' developed and travellers thought of rugged crags, glaceirs and high mountains. In the present century tourists go for enjoyment to places which have some modern amenities and can also provide a certain amount of thrill. Holidaying is no longer the monopoly of Jewish-American multimillionaires, Egyptian pashas, Rajahs and Burra Sahibs. Today the number of tourists largely consists of people of average income-groups.

Extensive recreational travel is increasingly becoming popular in India. Objects may differ with everyone, some may seek rest and relaxation while others may go in for hiking and mountaineering or hunting and still others may go to admire the scenic beauty. There is no doubt that land for recreational purposes has become an established part of the land use programme[1]. Recreational travel is also growing because of the fact that it has social, scientific and educational value. At the United Nations Conference in San Francisco, tourist travel was listed amongst the important factors which contributed towards relaxation of world tension.

In the context of Asian awakening, tourism is not only of economic but also of political importance[2]. Home tourism has to be developed not only because it is desirable from the economic point of view but also for the fact that it helps to create better understanding between peoples living in different parts of the country. This realism has brought about a change

[1] Zierer, G. M., 'Tourism and Recreation in the West', Geographical Review July, 1952, p. 463.

[2] Kedapa, R. G., 'Tourism in India', Travel Supplement, A. B. Patrika, October 5, 1951, p. 1.

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in the official policy and greater emphasis is being laid on development of home tourism. India has a vast potential for earning foreign exchange through tourist traffic. The need for more sterling and dollars for our agricultural and industrial development can hardly be over emphasized. While India is earning little of foreign exchange from foreign tourists, Indian nationals going abroad for business, pleasure or study spend 4 to 5 crores of rupees annually. India's economy cannot afford this strain. In several foreign countries, tourism is an important part of national economy and earns large amounts by this 'invisible export'. It is estimated that 7 to 10 per cent of the adult population of Western Europe is engaged in occupations connected with travel and tourism[1]. Though reliable data is not available it is estimated that India earned about fifty million rupees of foreign exchange through tourist industry in 1954, while the total export of merchandise for 1953-54 amounted to Rs. 5,205,191,732[2]. Thus tourist income was approximately 1% of total value of exports. In western countries of Europe tourism contributes nearly 5% of total value of exports. India has to go a long way to reach that proportion. But it is heartening to note that receipts from tourism have doubled during the last four years. The value of exports of coal and hides and skins was equal to the earnings of tourism. There is immense scope for development of tourist industry in India. As yet we have hardly made a start. Tourist earnings can be increased from fifty million rupees to two hundred million rupees within five years provided we take the necessary steps.

India covers an area of 1,269,640 square miles. It is a land of beautiful mountains, numerous rivers and streams, large fertile plains, uplands, and enchanting valleys. India's civilization is amongst the most ancient civilizations of the world, being the home of Pre-Aryan, Aryan (Vedic) and Buddhistic cultures. Temples, Monasteries, Sculptures and paintings belonging to those and later times attract admiration from far and wide.

India's earliest trade relations were with near and far away countries-Persia, Babylonia, Egypt, Rome, Russia, China, Burma, Ceylon, Indonesia etc. India's population, 357 million, is one-seventh of the human race. The people have varied beliefs, customs and dresses. Hindi is the national language but English is understood by all educated persons, tourist guides and hotel staff.

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[1] Chib, S. N., 'Tourist Industry of India', The Statesman, New Delhi, Hotels and Travel Supplement, February 18, 1955, p. 11.

[2] Ibid, p. 1.

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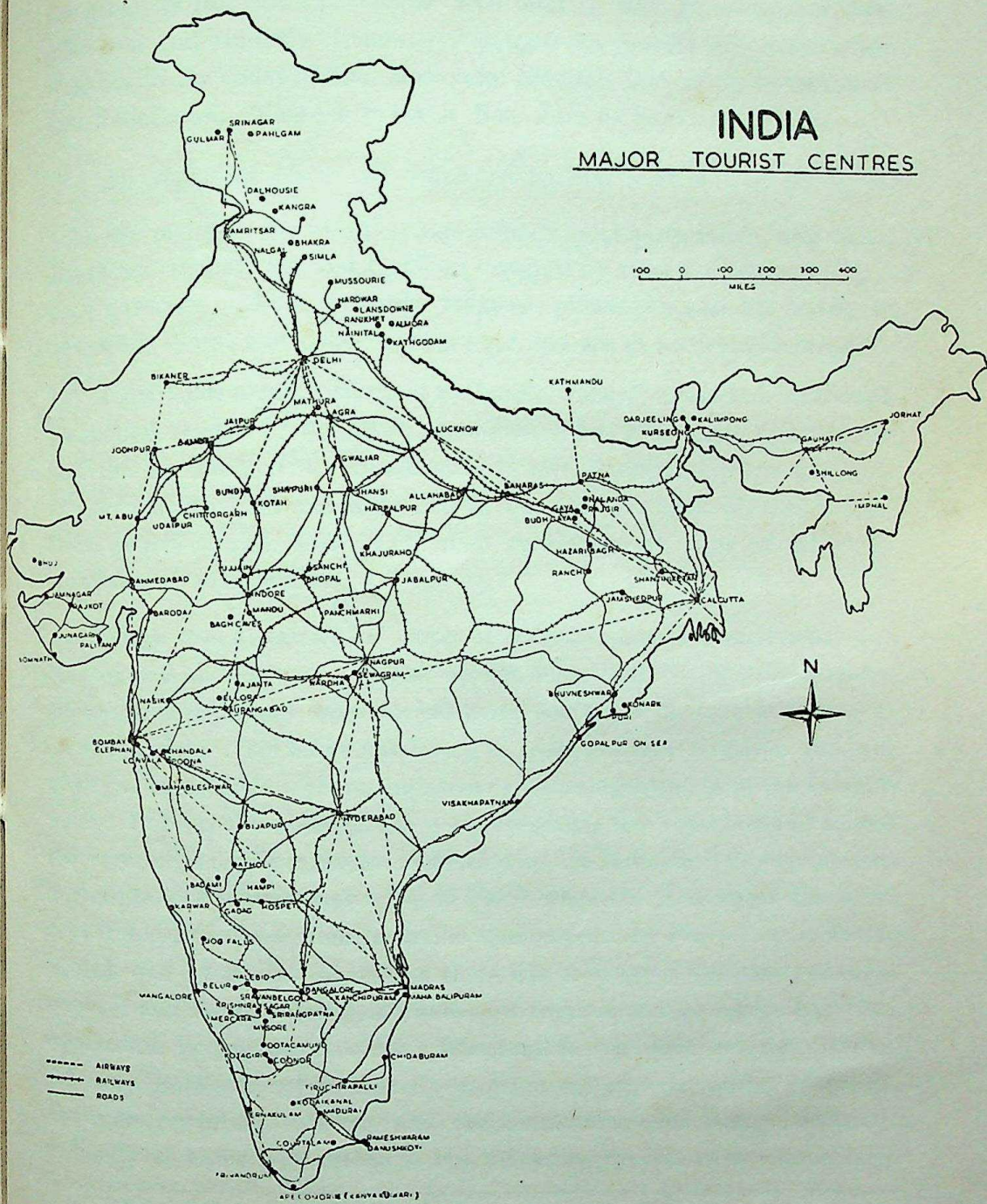

Climate varies from the sub-tropical in the south to the cool temperate in the north. Generally, winters are pleasant throughout the country except in the north where at times there may be freezing cold. Summers are generally hot but hill stations from 5000 to 8000 ft. above sea level offer cool and enjoyble climate, Amongst the famous hill resorts are Kashmir, Kulu Valley, Simla, Mussoorie, Nainital, Darjeeling, Ootacamund and Kodaikanal. Monsoon is active from July to September.

All important places are connected by rail, road and air transport.

'No region in the world is more colourful and picturesque than India. Its ancient monuments and buildings designed by master craftsmen of bygone days, its customs, festivals, religions, philosophy and art testify to one of the oldest and richest civilizations and are of absorbing interest'[1].

India holds abiding charm in its forests, valleys, mountains, cultivated plains and deserts for the hiker, naturalist, artist, sportsman, mountaineer and the general tourist. Handicrafts of rare workmanship are available as souvenirs-Kashmir and Kulu shawls, Banaras brocades, Mysore ivories, Delhi jewellery and Hyderabad inlaid metalware are some of the finest examples of good work.

India has a variety of physical features, climatic variations and ancient art and culture. It has nearly everything to offer in scenery, culture, industrial and archeological monuments and in its wide variety of fauna and flora. Till lately holidaying in India has been largely a personal affair for individuals without initiative or encouragement from the Government. But the Government has come to realize the importance of tourist industry and is taking measures to develop it. In India the first step towards organization of tourism was taken in 1948[2] when the Ministry of Transport constituted an ad-hoc Tourist Traffic Committee In 1949, Tourist Traffic Branch was set up and since then there has been rapid expansion of organization and its activities. A number of regional tourist offices has been established in important cities. Government has also set up Tourist Advisory Bodies to advise the Government on various tourist problems. Facilities regarding catering and accommodation are being improved. Publicity at home and abroad is not yet adequate but each year a large

[1] 'The Handbook of India', Tourist Division, Ministry of Transport, Government of India, New Delhi, June, 1956, p. 9.

[2] 'Tourism in India'—A Short Survey, Tourist Traffic Branch, Ministry of Transport, New Delhi.

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number of folders, guide books and maps and travel films etc. are being prepared. Government of India has set up Tourist Traffic Organization which has tourist offices in important cities. State Governments are also actively cooperating in that direction. At a conference of Central and State representatives in New Delhi, Rs. 4 crore plan was drawn up for providing Transport arrangements and accommodation facilities[1]. It was also suggested that new roads to tourist centres be constructed and existing ones should be improved. The Government is also studying possibilities of converting palaces in former princely states into guest houses for tourists. One of the palaces in Kashmir has already been converted into a tourist hotel. Steps are being taken by official Tourist Promotion Organizations to encourage formation of shikar agencies in all parts of India. Railways are giving concessions on rail fares to various hill stations during tourist seasons. In 1950 under E.C.A.F.E. the Government of India acquired the services of Ennis Groom, a travel expert from New Zealand. The Government also had consultations with American Tourist Promotion Group. India has joined 'The International Union of Official Travel Organizations' as a member. Through her efforts a Regional Travel Commission for Asia and Far East has been set up on the lines of similar Commissions for Europe and Africa. India is also a member of the International Institute of Scientific Travel Research whose aim is to promote research and scientific study of all phases of tourism and of the incidence of tourist travel on the whole of the economic, social and cultural complex of society.

Foreigners are now provided with 'Tourist Introduction Card' to enable them to obtain assistance of Government authorities. Considerable relaxation of various controls and hindrances relating to registration, visas, hotel accommodation, foreign exchange customs, export restrictions etc ; has been made. A 'Regional Association of Hotels' has been formed. The Tourist Traffic Branch of the Transport Ministry has issued tourist guides, folders, posters and maps. A pictorial map showing architectural and sculptural attractions has been published. Documentary films of various tourist centres have also been prepared and have received much appreciation at home and abroad. The National Tourist Organizatioon is acting as a watchdog to see that the tourist gets a fair deal from the travel agent. At the 4th Convention of Travel Agents' Association of India, held at Srinagar, on 2nd May, 1955, Shri S. N. Chib, Deputy Secretary,

[1] The Statesman, New Delhi 21-12-54.

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Ministry of Transport, disclosed thet the Governament will provide several concessions and travel facilities to low and middle income groups to encourage them to visit tourist spots of the country[1]. This convention was attended by sixty delegates representing travel companies, air lines, shipping firms, hoteliers, railway officers and Government observers. Two Tourist Publicity offices have been opened in New York and San Francisco and six more will be opended in Europe and one each in Sydney and Colombo. It has been recommended that one tourist office should be opened in Japan especially because there was not a single tourist office in the Far East[2]. The Central Government has undertaken to train chefs, bearers, barmen, dining room supervisors and other hotel attendents[3]. The Government is also undertaking training of Tourist guides and has recommended to hotels the International System of separate tarriff for bed and breakfast. India is to serve as training ground for hotel personel, and Technical Assistance Administration of U. K. is to be requested to assist.[4]

In 1950, 20,000 tourists visited India out of which 3,500 were Americans[5]. Apart from foreign tourist, efforts are being made to promote internal tourism to Kashmir and other places.

No. of visitors to Kashmir.

| | |
|---|---|
| 1950 | ... 6,783 |
| 1951 | ... 10,579 |

The number of Foreign tourists has been increasing[6].

| | |
|---|---|
| 1951 | ... 20,000 out of which 3,500 were Americans |
| 1952 | ... 25,448 out of which 4,889 were Americans |
| 1953 | ... 28,060 out of which 6,206 were Americans |

In 1954, the number of Tourists from various countries was as follows: January 1—June 30, 1954.

[1] The Times of India, New Delhi, 22-5-55.

[2] 'Lok Sabha Estimates Committee Report, 'The Statesman, New Delhi 15-12-56.

[3] The Statesman, New Delhi 11-2-54.

[4] Ibid.

[5] 'Tourism in India'—Tourist Traffic Branch, Ministry of Transport, Delhi, p. 4.

[6] 'Tourist Traffic'—Tourist Traffic Branch, Ministry of Transport, Delhi, 1954, p. 7.

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| Country | No. of persons | Places generally visited |
|---|---|---|
| U. S. A. | 4,461 | |
| U. K. | 3,678 | Ajanta, Ellora |
| France | 554 | Delhi, Jaipur |
| Pakistan | 4,023 | Agra, Banaras |
| Burma | 260 | Calcutta, Bombay, Mahabalipuram |
| Ceylon | 1,932 | Madura, Kanchipuram |
| China | 225 | Kashmir, Darjeeling |
| Russia | 102 | |
| Japan | 890 | |
| Middle East | 442 | |
| Others | 31 | |
| | 16,598 | |

From the above it is evident that the number of tourists from neighbouring countries is still too small and with proper publicity it can be greatly increased. Similarly, with proper facilities and publicity several other places in India could also be visited by tourists. Thre is no doubt that due to the post war difficulties such as the high prices and shattering of national economies of various countries, tourist trade has been greatly affected. In periods of crisis tourist trade is first to suffer and slowest to recover. As Andre Siegfried[1] puts it, 'it reacts like a barometer to both the heights and depths of economic situation'. Conditions are becoming better now and there is great prospect for the development of tourism. With the rise in per capita income the average citizen in India will have more to spend and tourist trade is bound to profit by it. As a result of the action on the part of several State Governments and the Central Government, not to move to summer hill stations, adverse effect has been felt on the economy of these stations, but measures are being taken to rehabilitate their economy. On the whole, this has been compensated by the development of Mountaineering in the Himalayas which attracts every year increasing number of Indians and foreigners. More recently some of the well placed North Indian Stations have developed winter sports programmes and are becoming all year commercialized resorts with definite seasonal shifts in attractions and clientele. Development of tourism in India will help the country by earning valuable exchange and lot of good-will from foreigners, and by fostering better appreciation of different parts of the country, it will create a greater cordiality between the nationals of India.

[1] Siegfried, Andre, 'Switzerland', London, 1950, p. 106.

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# PRELIMINARY REPORT

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# A PRELIMINARY REPORT ON RAJGHAT ARCHAEOLOGICAL EXCAVATIONS 1957*.

Dr. A. K. NARAIN

Like many archaeological sites the discovery of Rajghat was due to an accident. The chance diggings for spoil earth by the East Indian Railway authorities in connection with the extension and remodelling of the Kashi railway station exhumed a fairly large number of antiquities and revealed the possibilities of Rajghat site to the Archaeological department which took up a portion of the site for trial excavations under the direction of Shri K. Deva, now the Superintendent, Temple Survey project, Bhopal. A brief statement about the nature and extent of excavations and the materials found was published by Shri K. Deva in *Annual Bibliography of Indian History and Indology*, Vol. III, pp. xli-li and stray notices on some of the objects found from Rajghat have been made in some Journals. Undoubtedly, Rajghat came into prominence as one of the most rewarding of the key sites in northern India from the archaeological point of view. But over a large portion of the site the school and college buildings of the Rishi Valley Trust are built and a considerable part is occupied by the Kashi Railway Station building and the yard and the Railway quarters. However, whatever area is left out is bound to provide key to many problems of north Indian archaeology and history. But although the whole area is declared to be protected only a small part on the bank of the river is acquired and fenced by the Archaeological Survey of India. It is a pity that even as recently as 1955-56 considerable area was despoiled for removing earth from the valuable rampart side.

The plateau of Rajghat is situated in the outskirts of the city of Varanasi (Banaras) on its north-eastern boundary. It is an extensive table-land and it rises 50 to 60 feet above the surrounding ground level. It occupies a commanding position overlooking the city and the Ganga. The plateau is fortified in all directions in the north and north-east by the Barna, towards the west and north-west by a steep depression said to be an old bed of the Barna and on the south-east by the Ganga. The remains of rampart and indications of gate-openings are clearly noticeable. Tradi-

*These excavations were carried out under the auspices of the Department of Ancient Indian History, Culture and Archæology of the College of Indology, Banaras Hindu University, from March to May 1957.

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tionally it is known as the fort of a certain Raja Banar which is obviously suggested by the name of the city. But "that it marked the site of Vārāṇasī is strikingly proved by the discovery from the excavations (1940) of a sealing inscribed in Gupta characters with *Vārāṇasy-adhishṭhān-ādhikaraṇasya*=(the seal) of the city administration of Vārāṇasī."

The rampart area not being acquired, we could not, howsoever much we liked, start from the rampart and we had no other option but to start in the acquired and fenced area which includes the Maqbara of Lal Khan. But more than three-fourth of the area had already been disturbed by the Railway diggings upto a depth of 15 to 20 feet from the top. In the remaining portion a considerable area was occupied by the Maqbara of Lal Khan. Obviously we had very little to choose. On the other hand, the materials which were brought to light by the Railway diggings and the trial excavations made by the Archaeological Survey of India, were so staggeringly enormous and remarkably valuable that it posed a problem. Naturally we decided to plan our excavation with a view to providing a time table to the site and thereby afford some clue for the classification of the material discovered earlier. Working from the topmost part of an undisturbed area but close to the edge which separates the lower levels created by the removal of earth by the Railways, we selected an area of 40′×40′ on the topmost level on which stands the Maqbara of Lal Khan built in 1804. Leaving a small balk of six feet on the eastern side of RG I we took a vertical section cutting the slope in order to get some index of habitation layers removed by Railway digging and to correlate the stratification of RG I with that of RG II—the area selected at the end of the slope of the edge about 15 to 16 feet deep from the top surface of RG I—where we dug four trenches of 20′×20′ each. We selected these areas with a view to knowing, on the one hand the continuous sequence from the earliest to the latest occupation periods at Varanasi, and on the other, the nature of the occupation layers destroyed by the Railway authorities.

From our excavations it became clear that at least in the area excavated the habitation continued from circa 6th—5th century B.C. to about 16th century A.D. Collectively speaking the occupational deposits could be tentatively divided into six periods. But individually RG I could be divided into six and RG II into four periods. Further, our excavations seem to confirm the statement of Shri K. Deva, that "a particular portion of the Rajghat plateau, near the quadrangle of Lal Khan's tomb, however, shows no traces of Gahadvala occupation, and the latest stratum here dates from Late Mughal times." (op.cit.p.xlii).

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*YAJÑA-KUNDA*—LIKE STRUCTURES EXPOSED IN PERIOD IV (C. 5th CENT.—8th CENT, A.D.)

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TOP LEFT : A STONE PLAQUE ; REST : TERRACOTTA HUMAN FIGURINES FROM RAJGHAT.

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It is of special interest to geologists and zoologists that we found in RG II certain skeleton pieces in trench no. A2, at a depth of about 55 feet from the top surface of RG I. These bones were found embedded in the natural soil beneath a number of barren alternating layers of kankar and sand. Only a small number of them could be recovered intact and it is expected that the rest of the skeleton may be found at the same level within the walls of the pit. A close examination of these bones has revealed that they are in early stages of fossilisation. This indicates their antiquity. Their exact dating will be of great interest and is being attempted.

A preliminary study of these remains has shown that they belong to a vertebrate of the class Mammalia. This animal seems to belong to cattle group. Further, the position of vertebrate indicates that the animal met an accidental death in an abnormal posture. A detailed study of the bones which essentially include vertebrate and ribs, is in progress.

The following chronology may be roughly assigned to the occupational Periods from bottom upwards :—

**Period I.**

*Circa 6th Century B.C. to 3rd Century B.C.*

No building structures of this period have been found. The ceramics of this period consists of fine pieces of Northern Black Polished ware and sherds of associated wares with plain grey ware of different shades. The N.B.P. ware though usually coal-black, is sometimes in golden and steel-blue shades ; some pieces have been found having different colours on each side. Sometimes the plain grey sherds are found with black tricklings. Two sherds of interesting features having dull black interior and ashy grey exterior have been found bearing black and orange-red bands. There are also pieces of unslipped red and black-and-red ware.

Twenty beads of terracotta, glass, stone and copper have been noted from this period.

A few terracotta human and animal figurines have also been found.

**Period II.**

*Circa 2nd Century B.C. to 1st Century A.D.*

Building structures consisting of remains of some walls (Brick size 1.7″×11″×2″) have been exposed. The interesting feature is a drain running through the three trenches in RG II.

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Varieties of N. B. P. ware continued in use as in the preceding period but the plain grey ware occurred only sporadically.

Five Seals bearing the name *Revatimita* written in letters, palaeographically dateable in 2nd —1st Century B.C. and one Seal bearing the inscription *Pushamita* or *Agamita*, which may be placed palaeographically to 1st Century A.D. **(Plate IV B. No. 2)**, uninscribed cast copper coins, storage jars, a terracotta ring-well and *kacchā* well with no terracotta rings, and soakage jars, and a broken piece of a fine terracotta plaque are other finds of this period. Thirty nine beads of stone, glass and terracotta have been noted from this period.

### Period III.

*Circa 2nd Century A.D. to 4th Century A.D.*

Building structures consisting simply the remains of walls have been exposed, but on account of insufficient area excavated, it is difficult to know the exact nature of the structures.

Red ware of thick section both slipped and washed, bearing designs of wheel, lotus and sun etc. have been found. Broken pieces of one interesting earthen vessel of thick section and large size have been found with stamped design showing a railing with three flag-staffs surmounted respectively by a Hollow-Cross, a Triratna and Dharma-Chakra. Another interesting piece is a broken sherd of a terracotta votive tank (?) showing a ladder and another unidentified object.

A seal with the design of a couchant humped bull, bearing the inscription *Pushkaraṇa or Pushkaraṭa* in the characters of 2nd—3rd Century A.D. **(Plate IV B. No. 3)**, some round copper coins and beads of terracotta, stone and glass are among the other finds of this period.

### Period IV.

*Circa 5th Century A.D. to 8th Century A.D.*

Building structures in the shape of walls have been exposed but it is not possible to identify the nature of the structures. Besides the remains of the walls, two square *Kuṇḍas* built of bricks tapering downwards are of special interest **(Plate I)** ; one of them at least clearly resembles a *Yajña-Kuṇḍa.*

Fine terracottas, both human figurines and animals, and one tiny stone head of the Buddha are among the other finds of this period.

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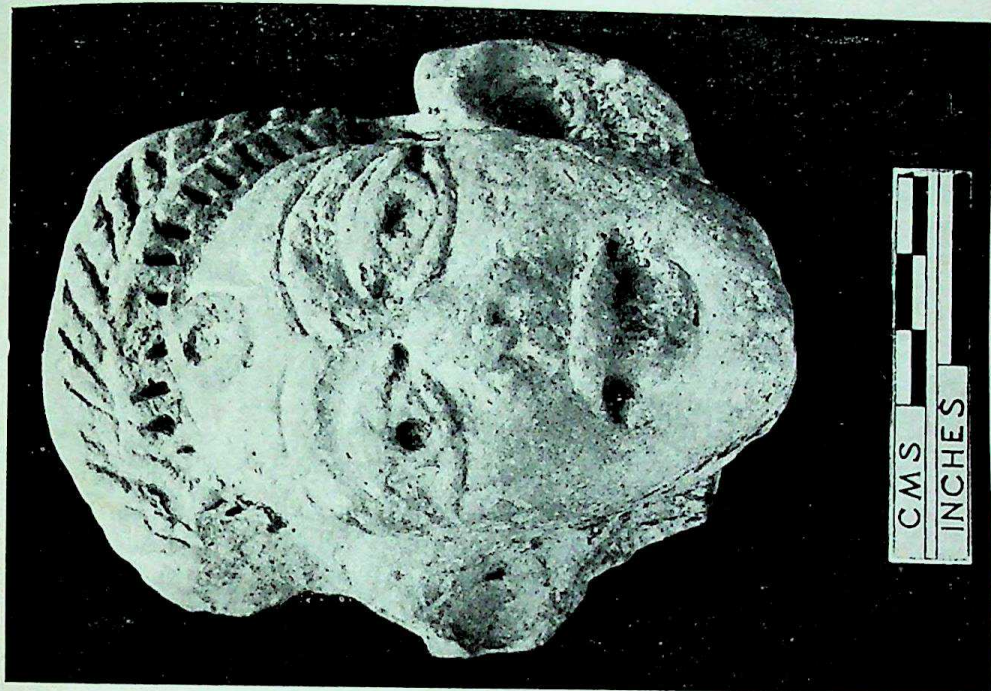
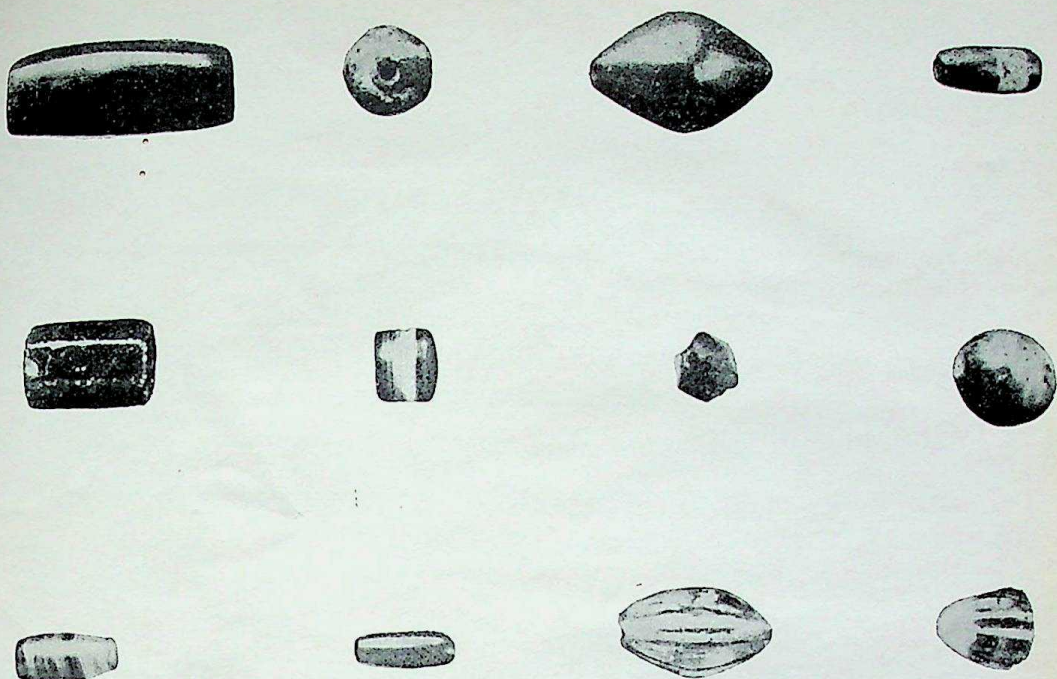
*PLATE III (A)*

A FEMALE FIGURINE OF CLAY DECORATING A SPOUTTED VESSEL, RAJGHAT.

PLATE III (B)

A TERRACOTTA HEAD FROM RAJGHAT.

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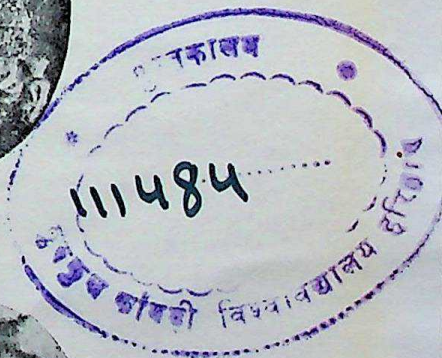

It appears that during this Period people followed the custom of post-cremation burial of human relics in small jars. These small earthen vessels containing charred human bones, grains and cowries are often capped by stone pestles.

While the red ware occupy the dominant place, sherds of a black ware are also found. Glazed pottery of thick section, spouts in different shapes and designs, terracotta sprinklers, knobbed pottery, few steatite pots in milky colour are among the other finds of this period.

Seals and sealings have also been found ; two of them bear the name of Bhadrasvāmī and Samudradatta **(Plate IV B. No. 1)** respectively.

Round copper coins and 31 beads have been noted from this period.

**Period V.**

*Circa 9th Century A.D. to 13th Century A.D.*

A number of fallen architectural fragments like *śikharas* and *āmalakas,* door jambs and lintels, some of which are carved with decorative patterns and which may belong to the last phase of the Pre-Mohammadan period were found peeping out of the section of the sloping edge dividing RGI and RG II. The brick structures of this period are very much destroyed. In RG I A1 we found only two courses of brick layers of this period upon which stands the wall built of *lakhauri* bricks. In another trench of RGI a semi-circular brick structure which may be the part of a well also seem to belong to this period. A mediaeval Hindu coin (?) and a number of terracottas, beads and stone sculpture pieces are among other finds of this period. The occupation layers of this period in RG I are very disturbed.

**Period VI.**

*Circa 14th to 16th Century A.D.*

This period is characterised by glazed and red wares, polychrome glass bangles along with the red ordinary ware. China clay potteries have also been found, and spoutted pots have been recovered in good number. *Lakhauri* bricks have been used for building construction.

The chronology of this period is clear from one coin of Akbar and another of one of the Sūri Kings (most probably Islam Shah).

A small stone image of Gaṇesha also has been found.

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